BLAUPUNKT
BOSCH Gruppe

Farbfernseher
Colour TV
Televisore a colori

Chassis FM 100-22

PM 40-46	7 666 020
PM 42-47	7 666 040
PM 45-47	7 666 060
PM 37-47	7 667 000
PM 40-48	7 667 020
PM 42-48	7 667 040
PM 45-48	7 667 060
PM 55-48	7 667 100

Kundendienstschrift · Service Manual
Istruzioni di assistenza

(D) Btx * 30 39 68 #

VKD 6 D88 464 006

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Service-Einstellungen

Die Service-Einstellungen nur am betriebswarmen Gerät vornehmen.

PM 37-47 / PM 40-46 / PM 40-48
PM 42-47 / PM 42-48 / PM 45-47
PM 45-48

Einstellung Spannung Ⓜ = + 123 V
Sender empfangen. Kontrast und Helligkeit auf Minimum einstellen. Voltmeter an R 337 und Masse. Mit R 637 (Chassis-Platte) einstellen.

PM 55-48

Einstellung Spannung + C = + 200 V
Sender empfangen. Kontrast und Helligkeit auf Minimum einstellen. Voltmeter an D 514 und Masse. Mit R 637 (Chassis-Platte) einstellen.

Bildhöhe
Mit R 436 (Chassis-Platte) einstellen.

Bildbreite
Mit L 511 (Chassis-Platte) einstellen.

Bild-Linearität
Mit R 433 (Chassis-Platte) einstellen.

Horizontal-Frequenz
Videotext-Decoder bzw. Steckerplatte ziehen. IC 9200/5 an Masse. Mit R 9214 (ZF-Modul) auf Schwebung einstellen. Kurzschluß aufheben. Decoder bzw. Steckerplatte einstecken.

Schärfe (Focus)
Mit R 501 (Chassis-Platte) einstellen.

Service Adjustments

The service adjustments may be carried out at a set warmed up to normal operating temperature only.

PM 33-47 / PM 40-46 / PM 40-48
PM 42-47 / PM 42-48 / PM 45-47
PM 45-48

Adjustment voltage Ⓜ = + 123 V
Receive transmitter. Set contrast and brightness to minimum. VTVM to R 337 and ground. With R 637 (Chassis Board) adjust.

PM 55-48

Adjustment voltage + C = + 200 V
Receive transmitter. Set contrast and brightness to minimum. VTVM to D 514 and ground. With R 637 (Chassis Board) adjust.

Picture height
With R 436 (Chassis Board) adjust.

Picture width
With L 511 (Chassis Board) adjust.

Picture linearity
With R 433 (Chassis Board) adjust.

Horizontal frequenzy
Pull teletext or socket board. IC 9200 connect pin 5 to ground. With R 9214 (IF Module) adjust to beat. Finish the short circuit. Insert teletext or socket board.

Definition (Focus)
With R 501 (Chassis Board) adjust.

Regolazioni di servizio

Le regolazioni di servizio possono iniziarsi solo ad apparecchio caldo.

PM 33-47 / PM 40-46 / PM 40-48
PM 42-47 / PM 42-48 / PM 45-47
PM 45-48

Regolazione della tensione Ⓜ = + 123 V
Ricevere una emittente. Contrasto e luminosità regolati per il minimo. Voltmetro elettronico fra massa e R 337. Regolare la tensione con R 637 (Piastra chassis).

PM 55-48

Regolazione della tensione + C = + 200 V
Ricevere una emittente. Contrasto e luminosità regolati per il minimo. Voltmetro elettronico fra massa e D 514. Regolare la tensione con R 637 (Piastra chassis).

Ampiezza
Regolare con R 436 (Piastra chassis).

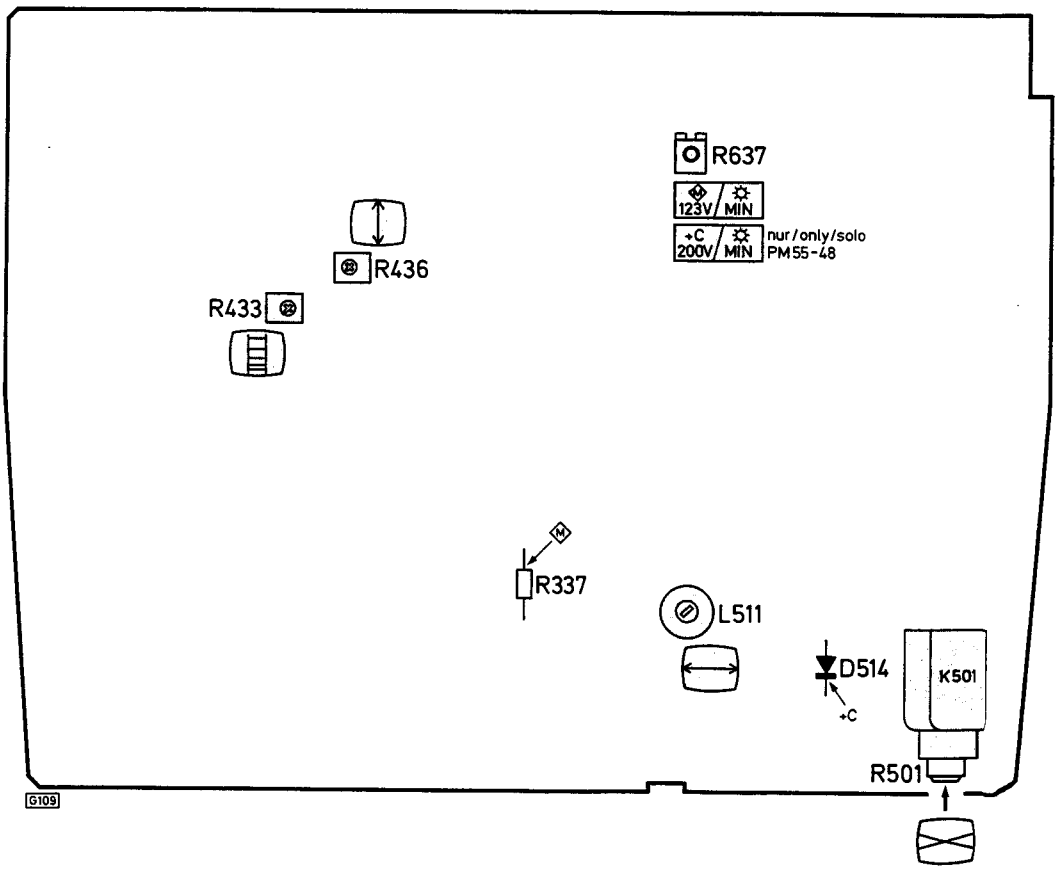
Larghezza del riquadro
Regolare con L 511 (Piastra chassis).

Lin. del quadro
Regolare con R 433 (Piastra chassis).

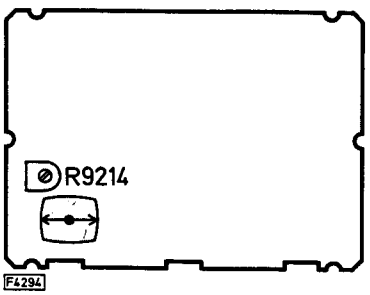
Frequenza orizzontale
Estarre Televideo. Collegare a massa il punto IC 9200/5 con R 9214 (Modulo FI). Completare il corto circuito. Mette dentro televideo.

Nitidezza (Fuoco)
Regolare con R 501 (Piastra chassis).

Chassis-Platte
Chassis Board
Piastra chassis



ZF-Modul
IF Module
Modulo FI



Symbole und ihre Bedeutung
Symbols and their meaning
Simboli e loro significati

P
PROGR.

OO
ZWEI-KANAL-TON
TWO-CHANNEL SOUND
PER AUDIO BICANALE
SON DEUX CANAUX

ME
SPEICHERTASTE
MEMORY BUTTON
TASTO DI MEMORIA
TOUCHE MEMOIRE

S
NORMTASTE
TV STANDARD SELECT. BUTTON
COMMUT. DI NORMA
TOUCHE DE NORME

+
ÄNDERUNG +
ALTERATION +
MODIFICA +
MODIFI +

−
ÄNDERUNG −
ALTERATION −
MODIFICA −
MODIFI −

HELLIGKEIT
BRIGHTNESS
LUMINOSITA'
LUMINOSITE

KONTRAST
CONTRAST
CONTRASTO
CONTRASTE

FARBKONTRAST
CONTRAST COLOUR
CONTRASTO COLORE
CONTRASTE COULEUR

LAUTSTAERKE
VOLUME
VOLUME SONORE

FEINABST.
FINE TUNING
SINT. FINE
REGLAGE FIN

C
KANALWAHL
CHANNEL SEL.
SELEZ. CANALE
SELECT. DE CANAUX

BALANCE
BILANCIAM.
BALANCE

SUCHLAUF
SELF-SEEK
SINT. AUTOM.
RECHERCHE AUTOM.

$U_{BIII/IV}$
SCHALTSP. BANDWAHL
BAND SEL. SWITCHING VOLTAGE
TENS. DI COMMUT. SELEZ. BANDA
TENS. DE COMMUT. SELECT. BANDE

U_{VHF}
SCHALTSP. VHF
SWITCHING VOLT. VHF
TENS. DI COMMUT. VHF
TENS. DE COMMUT. VHF

U_{UHF}
SCHALTSP. UHF
SWITCHING VOLT. UHF
TENS. DI COMMUT. UHF
TENS. DE COMMUT. UHF

U_{AFC}
SCHALTSP. AFC
SWITCHING VOLT. AFC
TENS. DI COMMUT. AFC
TENS. DE COMMUT. AFC

U_{AV}
SCHALTSP. AV
AV SWITCHING VOLT.
TENS. DI COMMUT. AV
TENS. DE COMMUT. AV

U_{NORM}
SCHALTSP. NORM
SWITCHING VOLT. STANDARD
TENS. DI COMMUT. NORMA
TENS. DE COMMUT. STANDARD

U_{COINC}
SCHALTSP. KOINZ.
SWITCHING VOLT. COINC.
TENS. DI COMMUT. COINC.
TENS. DE COMMUT. COINC.

$U_{EURO-AV}$
SCHALTSP. EURO-AV
SWITCHING VOLT. EURO-AV
TENS. DI COMMUT. EURO-AV
TENS. DE COMMUT. NORME FR

U_{VQ}
SCHALTSP. VIDEO QUELLE
SWITCHING VOLT. VIDEO SOURCE
TENS. DI COMMUT. SORG. VIDEO
TENS. DE COMMUT. SOURCE VIDEO

U_{DATA}
SCHALTSP. DATENBETR.
SWITCHING VOLT. DATA MODE
TENS. DI COMMUT. DATI
TENS. DE COMMUT. FONCT. DONNEES

$U_{4,5MHZ}$
SCHALTSP. 4,5 MHZ
SWITCHING VOLT. 4,5 MHZ
TENS. DI COMMUT. 4,5 MHZ
TENS. DE COMMUT. 4,5 MHZ

U_{τ}
REGELSP. VERZOEGERT
DELAYED CONTR. VOLTAGE
TENS. DI CONTR. RITARD.
TENS. DE REGUL. RETARDEE

U_{TUNE}
ABSTIMMSP. TUNER
TUNING VOLT. TUNER
TENS. DI SINTONIA TUNER
TENS. D'ACCORD TUNER

U_{AFC}
REGELSP. AFC
AFC CONTROL VOLT.
TENS. DI CONTR. AFC
TENS. DE REGUL. AFC

U_{MUTE}
STUMMSCHALTUNG
MUTING
SILENZIAMENTO
SILENCIEUX

TASTIMPULS
GATING PULSE
IMPULSO A CADENZA
IMPULS. DE DECLENCHEMENT

VERT.
VERT. TASTIMPULS
VERT. GATING PULSE
IMP. A CADENZA VERT.
IMP. TRAME

VERT.
VERT. PARABEL
VERT. PARABOLA
PARABOLA VERT.
SIGNAL PARABOLIQUE

VERT.
VERT. SAEGEZAHN
VERT. SAW TOOTH
DENTE DI SEGA VERT.
SIGNAL DENT DE SCIE

HOR.
HOR. ANSTEUERUNG
HORIZ. DRIVE
PILOTAGGIO ORIZZ.
SYNCHR. LIGNES

REF.
REF. IMPULS
REFERENCE PULSE
IMP. DI RIFER.
IMP. DE REFER.

SCHUTZSCHALTUNG
CIRCUIT PROTECTION
CIRCUITO DI PROTEZIONE
CIRCUIT DE SECURITE

FARBTON
TINT
TINTA
TEINTE

REF.
REF. LAUTSTAERKE
VOLUME REF. VOLT.
TENS. DI RIF. VOLUME
TENS. DE REF. VOL. SONORE

FBAS
FBAS-SIGNAL
CCVS SIGNAL
SEGNALE SVCC
SIGNAL VIDEO COMPOSITE

SSC
SUPERSANDCASTLE

SB
STRAHLSTR. BEGR.
BEAM CURRENT LIM.
CORRENTE CATODICA MEDIA
LIM. COUR. DE FAISCEAU

SSB
SPITZ. STRAHLSTR. BEGR.
PEAK BEAM CURRENT LIMITING
CORR. CATODICA DI PICCO
LIM. DE FAISCEAU CRETE

R
ROT-SIGNAL
RED SIGNAL
SEGNALE ROSSO
SIGNAL ROUGE

G
GRUEN-SIGNAL
GREEN SIGNAL
SEGNALE VERDE
SIGNAL VERT

B
BLAU-SIGNAL
BLUE SIGNAL
SEGNALE BLU
SIGNAL BLEU

Y
Y-SIGNAL
SEGNALE Y
SIGNAL Y

F
F-SIGNAL
CHROMA SIGNAL
SEGNALE F
SIGNAL CHROMA

SW
SCHWARZWERT
BLACK LEVEL
LIVELLO DEL NERO
NIVEAU DU NOIR

AUDIO
AUDIO-SIGNAL
SEGNALE AUDIO
SIGNAL AUDIO

AUDIO-L
AUDIO SIGNAL LINKS
AUDIO SIGNAL LEFT
SEGNALE AUDIO SINISTRA
SIGNAL AUDIO GAUCHE

AUDIO-R
AUDIO SIGNAL RECHTS
AUDIO SIGNAL RIGHT
SEGNALE AUDIO DESTRA
SIGNAL AUDIO DROIT

EURO-AV VIDEO
VIDEO SIGNAL EURO-AV
SEGNALE VIDEO EURO-AV
SIGNAL VIDEO NORME FR

EURO-AV AUDIO-R
AUDIO SIGNAL EURO-AV RECHTS
AUDIO SIGNAL EURO-AV RIGHT
SEGNALE AUDIO EURO-AV DESTRA
SIGNAL AUDIO NORME FR DROIT

EURO-AV AUDIO-L
AUDIO SIGNAL EURO-AV LINKS
AUDIO SIGNAL EURO-AV LEFT
SEGNALE VIDEO EURO-AV SINISTRA
SIGNAL AUDIO NORME FR GAUCHE

IR
IR-SIGNAL
SEGNALE IR
SIGNAL IR

U_{G1}
SPG. GITTER 1
VOLTAGE GRID 1
TENS. GRIGLIA 1
TENS. GRILLE G1

$U_{FOC.}$
FOKUSSP.
FOCUSSING VOLTAGE
TENS. DI FOCALIZZ.
TENS. DE FOCALIS.

U_{H}
HOCHSPANNUNG
EHT VOLTAGE
ALTA TENS.
HAUTE TENS.

U_{SG}
SCHIRMGITTERSP.
SCREEN-GRID VOLT.
TENS. GRIGLIA SCHERMO
TENS. GRILLE-ECRAN

TE
TEXT ENABLE

SCL
I^2C-CLOCK

VCL
VCR-CLOCK

ICL
I-BUS-CLOCK

SDA
DATEN
DATA
DATI
DONNEES

ZF
ZF-SIGNAL
IF SIGNAL
SEGNALE FI
SIGNAL FI

PP
PAL PRIORITAET
PAL PRIORITY
PRIORITA' PAL
PRIORITE PAL

F-DIR.
F-SIGNAL DIREKT
F SIGNAL DIRECT
SEGNALE F DIRETTO
SIGNAL CHROMA DIRECT

F_V
FV-SIGNAL
FV SIGNAL
SEGNALE FV
SIGNAL FY

F_U
FU-SIGNAL
FU SIGNAL
SEGNALE FU
SIGNAL FX

F-VERZ
F-SIGNAL VERZOEGERT
F SIGNAL DELAYED
SEGNALE F RITARD.
SIGNAL CHROMA RETARDE

DL
VERZOEGERUNGSLEITUNG
DELAY LINE
LINEA DI RITARDO
LIGNE A RETERD

U_{SCHUTZ}
SCHALTSP./SCHUTZFUNKTION
SWITCHING VOLT. /PROTECTIVE FUNCTION
TENS. DI COMMUT. /FUNZ.DI PROTEZ.
TENS. DE COMMUT. / SECURITE

FBAS SYNC.
FBAS/SYNC.-SIGNAL
CCVS/SYNC. SIGNAL
SEGNALE SINCR. /VIDEO COL. COMPOSITO
SIGNAL SYNC./VIDEO COMPOSITE

SYNC.
SYNC.-SIGNAL
SYNC. SIGNAL
SEGNALE SINCR.
SIGNAL SYNC.

$U_{50/60HZ}$
SCHALTSP. 50/60HZ
SWITCHING VOLT.50/60HZ
TENS. DI COMMUT. 50/60HZ
TENS. DE COMMUT. 50/60HZ

U_{BTX}
SCHALTSP. BTX
SWITCHING VOLT. BTX (VIEWDATA)
TENS. COMMUT. VIDEOTEL
TENS. COMMUT. VIDEOTEXTE

SYNC. VT
SYNC. VT
SYNC. VT (TELETEXT)
SINCR. TELEVIDEO
SYNC. TELETEXTE

SYNC. BTX
SYNC. BTX
SYNC. BTX (VIEWDATA)
SINCR. VIDEOTEL
SYNC. VIDEOTEXTE

U_{RESET}
SCHALTSP. RESET
SWITCHING VOLT. RESET
TENS. COMMUT. RESET

$U_{STAND-BY}$
SCHALTSP. STAND BY
SWITCHING VOLT. STAND BY
TENS. COMMUT. STAND BY
TENS. COMMUT. VEILLE

U_{HUB}
SCHALTSP. HUB
SWITCHING VOLT. DEVIATION
TENS. COMMUT. DEVIAZIONE
TENS. COMMUT. DEVIATION

U_{DEEM}
SCHALTSP. DEEM
SWITCHING VOLT. DEEMPHASIS
TENS. COMMUT. DEENFASI
TENS. COMMUT. DESACCENT.

U_{CAM-AV}
SCHALTSP. KAMERA WIEDERG.
SWITCHING VOLT. CAMERA PLAYBACK
TENS. COMMUT. RIPRODUZ. TELECAMERA
TENS. COMMUT. REPROD. CAMERA

U_{LED}
SCHALTSP. LED
LED SWITCHING VOLT.
LED TENS. DI COMMUT.
TENS. DE COMMUT. LED

ZEILENBREITE
LINE WIDTH
LARGHEZZA DI RIGA
AMPLITUDE HORIZONTALE

OST / WEST AMPLITUDE
EAST / WEST AMPLITUDE
AMPIEZZA EST / OVEST
AMPLITUDE EST / OUEST

HOR. LINEARITAET
HORIZ. LINEARITY
LINEAR. ORIZZ.
LINEAR. HORIZONT.

BILDLAGE HOR.
HORIZ. PICTURE POSITION
POSIZIONE ORIZZ. D'IMMAGINE
CADRAGE HORIZONT.

FOKUSREGLER
FOCUS CONTROL
REGOLAT. DI FOCALIZZ.
REGLAGE DE FOCALISATION

BILDLAGE VERT.
VERT. PICTURE POSITION
POSIZ. VERT. D'IMMAGINE
CADRAGE VERTICAL

BILDAMPLITUDE
FIELD AMPLITUDE
AMPIEZZA D'IMMAGINE
AMPLITUDE VERTICALE

TRAPEZ
TRAPEZIUM
TRAPEZIO
TRAPEZE

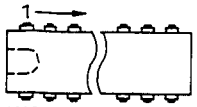
HOR. FREQUENZ
HOR. FREQUENCY
FREQ. ORIZZ.
FREQ. HORIZ.

VERT. FREQUENZ
VERT. FREQUENCY
FREQ. VERT.

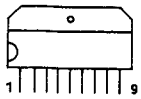
VERT. LINEARITAET
VERT. LINEARITY
LINEAR. VERT.
LINEAR. VERT.

OST/WEST SYMMETRIE
EAST/WEST SYMMETRY
SIMMETRIA EST/OVEST
SYMMETRIE EST/OUEST

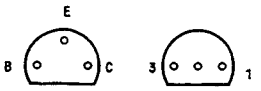
Wichtige Schaltzeichen
Important circuit symbols
Segni circuitali importanti



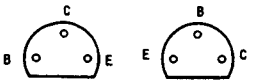
IC'S VON UNTEN GESEHEN
IC'S SEEN FROM BOTTOM
IC'S VISTI DI SOTTO
IC'S VUS DU DESSOUS



TDA 4601

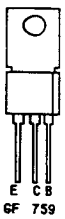


BF 199 — 78 L05 CP

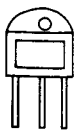


BF 421 / BF 422
BC 637 / BF 423

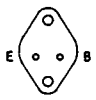
BC 548 / BC 558
BC 337/25
PN 2222
BC 338 / BC 324
BF 414
BC 308 / BC 248
BC 547



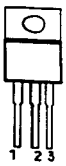
GF 759



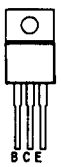
BU 508A / BU 903
BU 508D / BU 908



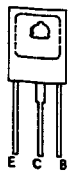
BU 208A
BU 546



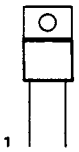
TY 401 64 / MC 7505
MC78 M05 CT
7812



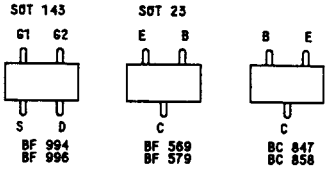
BD 561G
BU 908
BU 903
S 668T
BUT 11A
BUT 56A



BD 561 G
BD 139



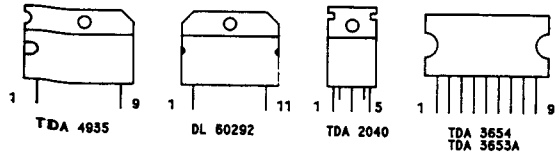
TDA 8170



BF 994
BF 996

BF 569
BF 579

BC 847
BC 858



TDA 4935 — DL 60292 — TDA 2040 — TDA 3654 / TDA 3653A

3/4W 0617 DIN
1/10W 0204 DIN
1/4W 0207 DIN
1/2W 0411 DIN
1W 0411 DIN
2W 0617 DIN
4W 0922 DIN

WIDERSTAND NICHT BRENNBAR
RESISTOR NOT FLAMMABLE
RESISTENZA NON INFIAMMABILE
RESISTANCE ININFLAMMABLE

DRAHTWIDERSTAND
WIRE RESISTOR
RESISTENZA A FILO
RESISTANCE BOBINEE

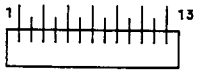
SICHERUNGSWIDERSTAND
SAFETY RESISTOR
RESISTENZA DI SICUREZZA
RESISTANCE DISJONCTABLE

KONDENSATOR
CAPACITOR
CONDENSATORE
CONDENSATEUR
250V~
400V~
630V~
1000V~

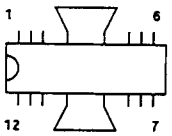
FOLIE
FOIL
A FOGLIA
FOLIO PLASTIQUE

KERAMIK
CERAMIC
CERAMICO
CERAMIQUE

ELKO
ELECTROLYTIC
ELETTROLITICO
ELECTROLYTIQUE



TDA 2653A

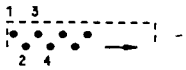


TDA 2655B

⚠ BEI ERSATZ AUS SICHERHEITSGRUENDEN NUR ORIGINALBAUTEILE VERWENDEN.
FOR REASONS OF SAFETY USE ORIGINAL PARTS ONLY WHEN REPLACING.
IN CASO DI SOSTITUZIONE UTILIZZARE PER RAGIONI DI SICUREZZA SOLAMENTE PEZZI DI RICAMBIO ORIGINALI.
EN CAS DE REMPLACEMENT N'UTILISER, POUR DES RAISONS DE SECURITE, QUE DES PIECES D'ORIGINE.

BEI EINGRIFFEN SCHUTZMASSNAHMEN FUER MOS-BAUTEILE BEACHTEN!
WHEN HANDLING MOS-CIRCUITS, ALWAYS OBSERVE THE MOS PROTECTION MEASURES!
ADOPERANDO COMPONENTI O CIRCUITI MOS OSSERVARNE LE CORRISPONDENTI MISURE DI PROTEZIONE!
LORS DE LA MANIPULATION DES CIRCUITS MOS, RESPECTER LES PRESCRIPTIONS MOS!

STECKERUNTERTEIL ZAEHLRICHTUNG
PLUG BOTTOM PART COUNTING DIRECTION
PARTE INFER. SPINA DIREZ. CONTEGGIO
SENS COMPTAGE PARTIE INFER. CONNECTEUR

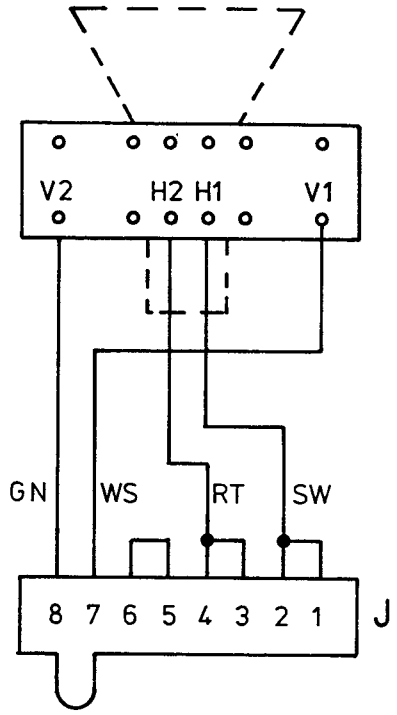


LOETSEITE
SOLDER SIDE
LATO SALDATURE
COTE SOUDURE

Verdrahtung der Ablenkspulen
Wiring of Deflection Yoke
Impianto elèttrico bobine di deviazione

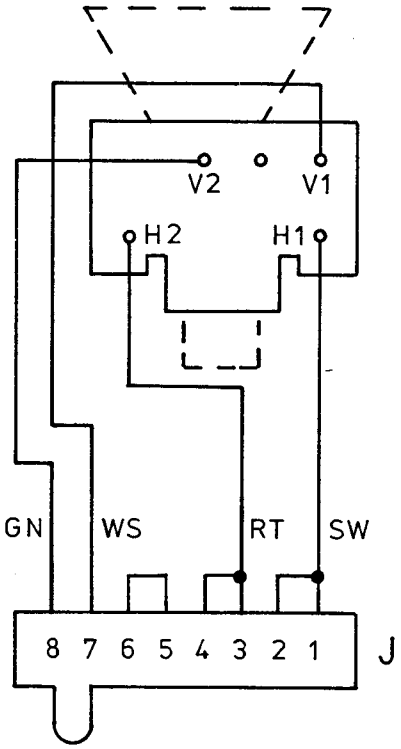
Bildröhre
Picture Tube
Tube image
Cinescopio

A 34 EAC 00X 03



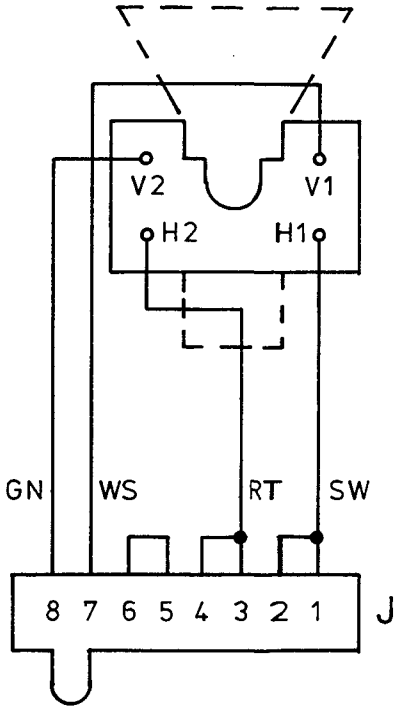
Bildröhre
Picture Tube
Tube image
Cinescopio

A 36 JAR 00X01



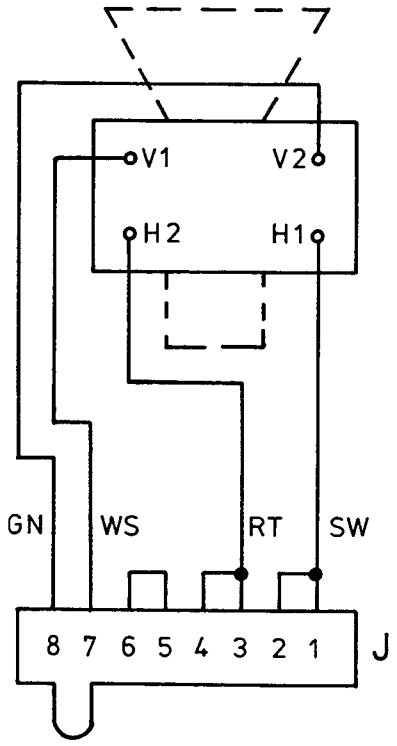
Bildröhre
Picture Tube
Tube image
Cinescopio

A 41 JAR 40 X 02

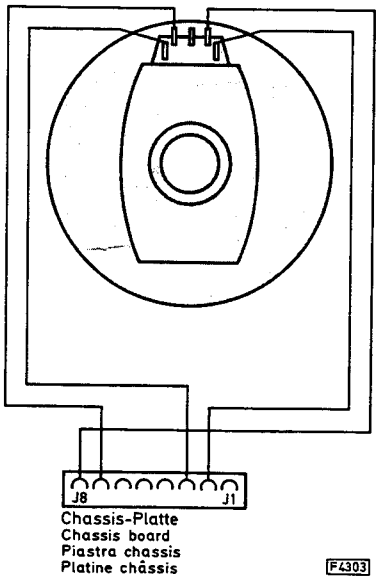


Bildröhre
Picture Tube
Tube image
Cinescopio

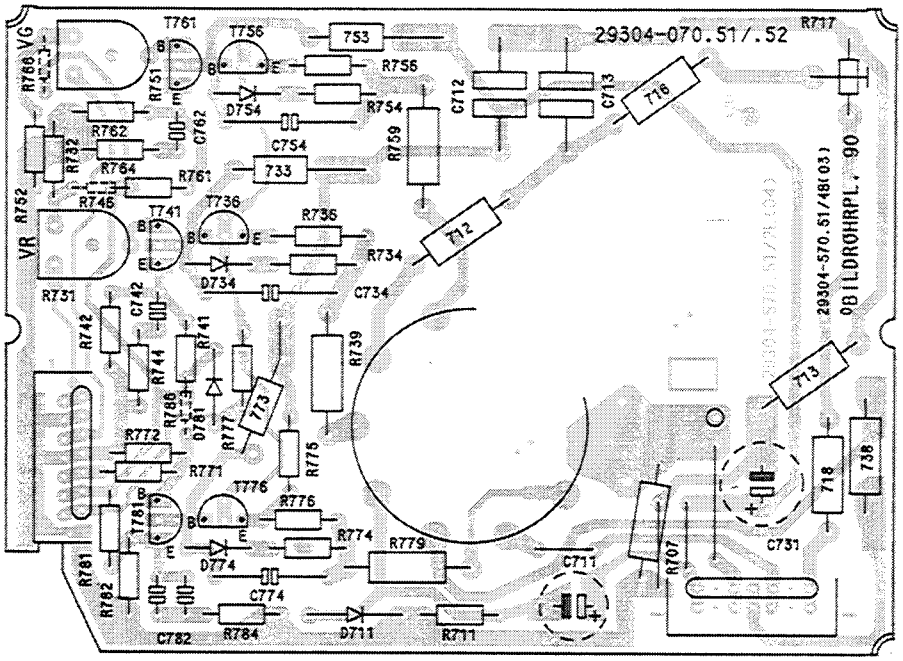
A 34 JLL 70X23



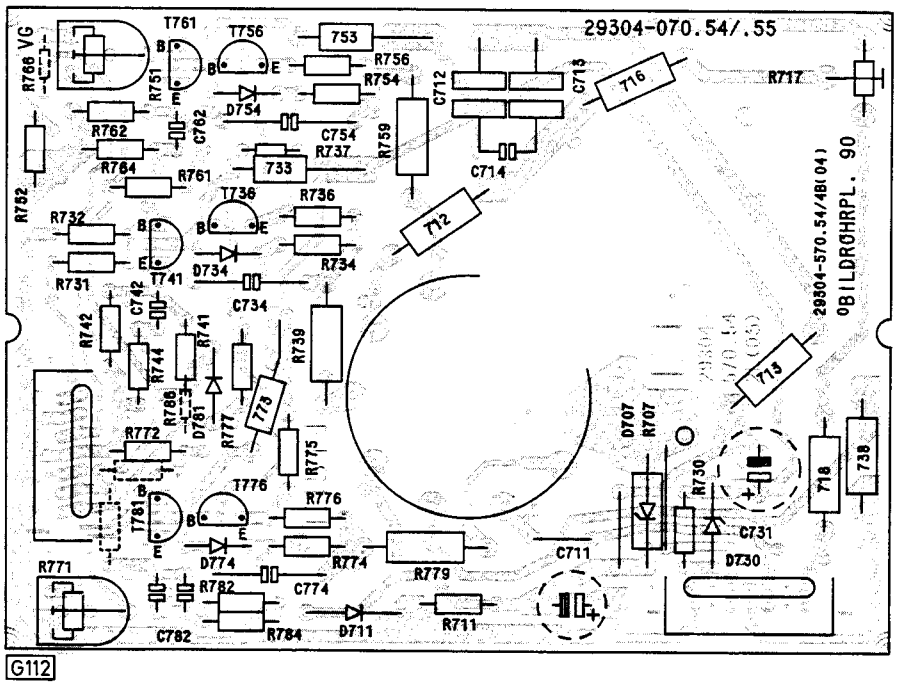
Bildröhre
Picture Tube
Cinescopio
A 51 JAR 43x01
A 51 JSX 61x03



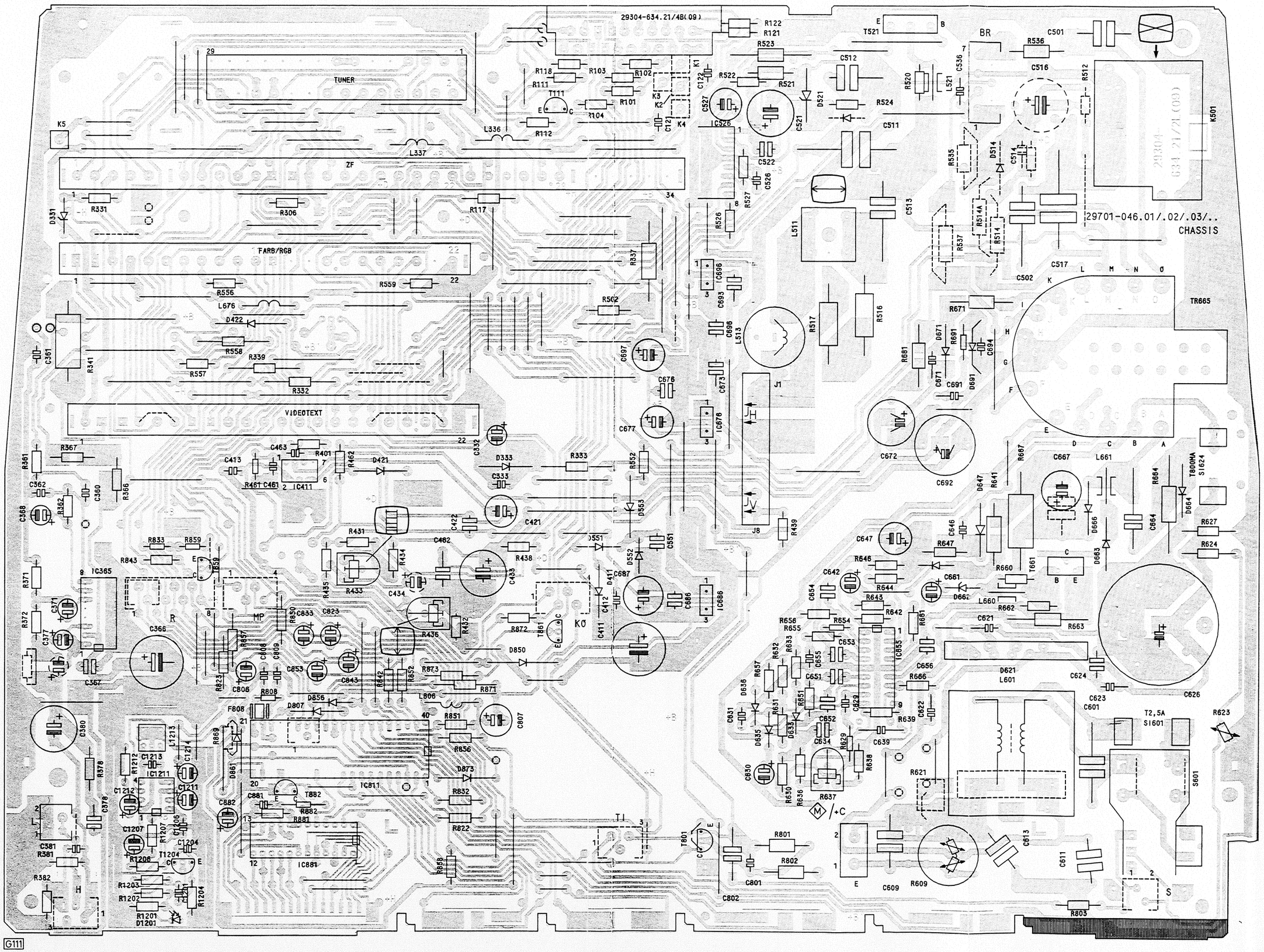
Bildrohr-Platte **8 669 423 902**
Picture Tube Board
Piastra cinescopio

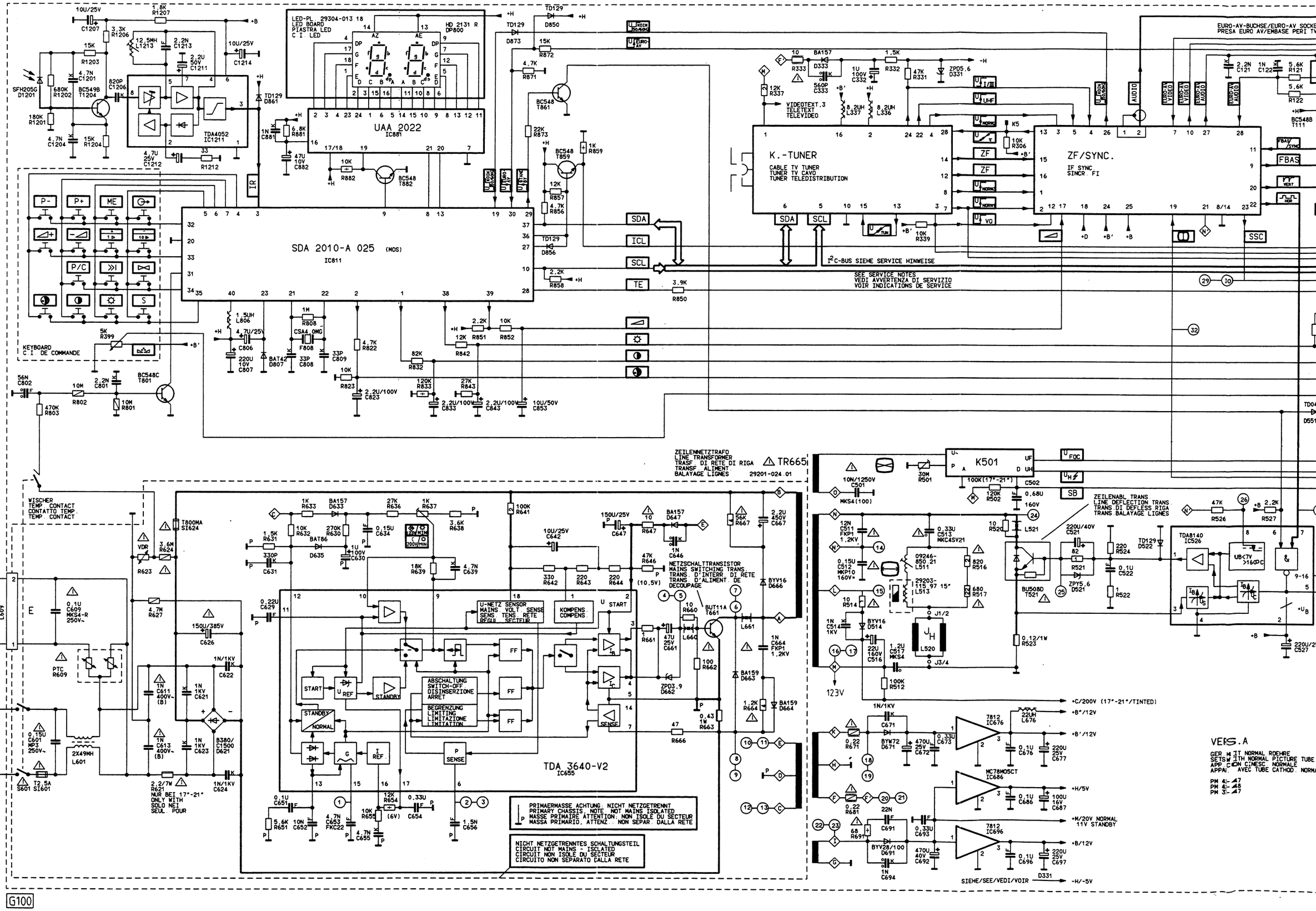


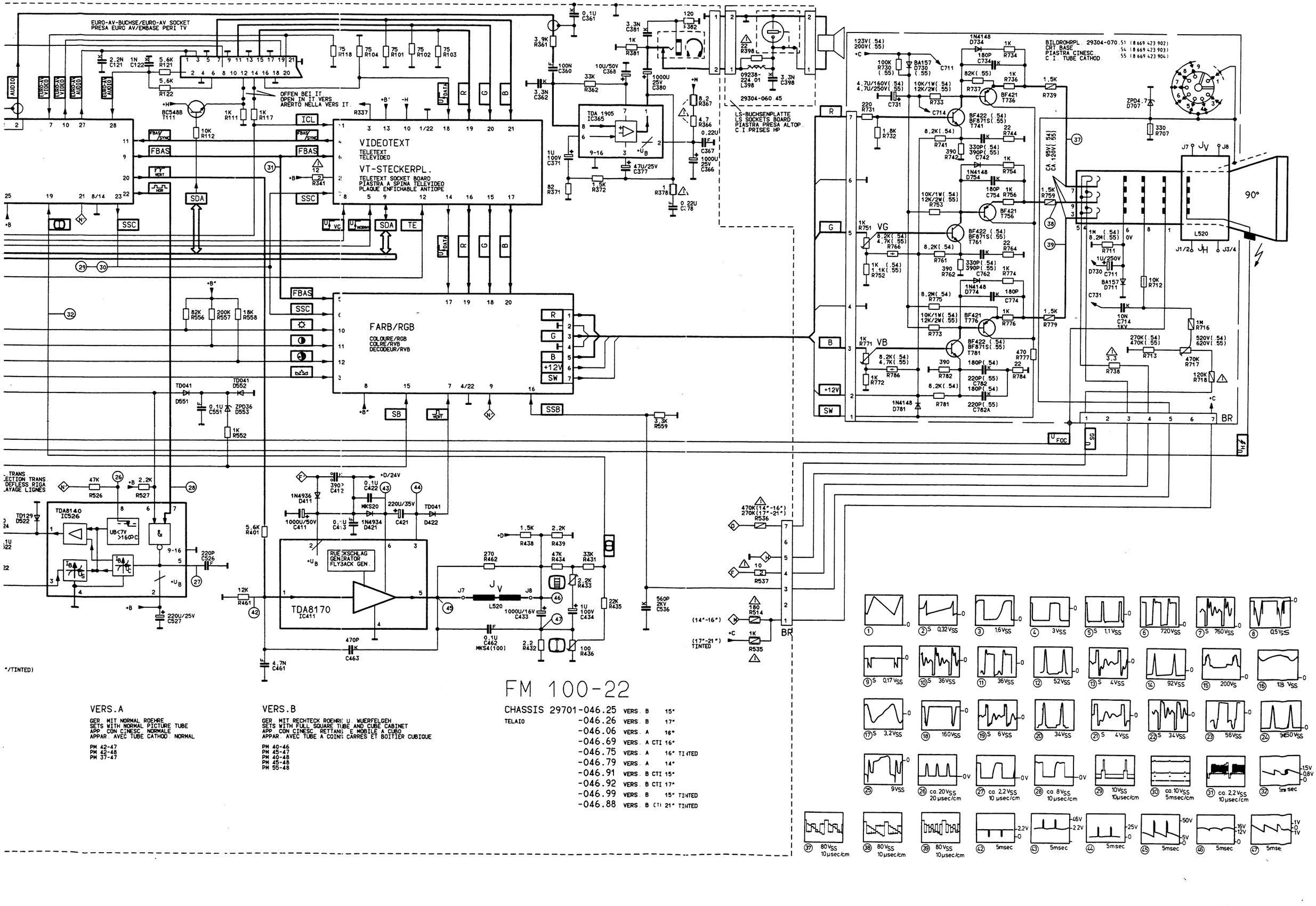
Bildrohr-Platte **8 669 423 903/904**
Picture Tube Board
Piastra cinescopio



Chassis-Platte
Chassis Board
Piastra chassis




LED-PL 29304-013 18
LED BOARD
PIASTRA LED
C I LED
HD 2131 R
DP800
UAA 2022
IC881
SDA 2010-A 025 (MOS)
IC811
KEYBOARD
C.I. DE COMMANDE
K.-TUNER
CABLE TV TUNER
TUNER TV CAVO
TUNER TELEDISTRIBUTION
ZF/SYNC.
IF SYNC.
SINCR. FI
VIDEOTEXT.3
TELETEXT
TELEVIDEO
EURO-AV-BUCHSE/EURO-AV SOCKE
PRESA EURO AV/EMBASE PERI TV
SDA
SCL
ICL
TE
I²C-BUS SIEHE SERVICE HINWEISE
SEE SERVICE NOTES
VEDI AVVERTENZA DI SERVIZIO
VOIR INDICATIONS DE SERVICE
ZEILENNETZTRAFO
LINE TRANSFORMER
TRASF. DI RETE DI RIGA
TRANSF. ALIMENT
BALAYAGE LIGNES
TR665
29201-024.01
TDA 3640-V2
IC655
PRIMAERMASSE ACHTUNG: NICHT NETZGETRENNT
PRIMARY CHASSIS, NOTE: NOT MAINS ISOLATED
MASSE PRIMAIRE ATTENTION: NON ISOLE DU SECTEUR
MASSA PRIMARIO, ATTENZ.: NON SEPAR. DALLA RETE
NICHT NETZGETRENNTES SCHALTUNGSTEIL
CIRCUIT NOT MAINS - ISOLATED
CIRCUIT NON ISOLE DU SECTEUR
CIRCUITO NON SEPARATO DALLA RETE
K501
ZEILENABL.TRANS
LINE DEFLECTION TRANS.
TRANS DI DEFLESS.RIGA
TRANS.BALAYAGE LIGNES
TDA8140
IC526
123V
+C/200V (17"-21"/TINTED)
+B"/12V
+B'/12V
+H/5V
+M/20V NORMAL
11V STANDBY
+B/12V
-H/-5V
SIEHE/SEE/VEDI/VOIR D331
VERS.A
G100



VERS.A

GER. MIT NORMAL ROEHRE
SETS WITH NORMAL PICTURE TUBE
APP. CON CINESC. NORMALE
APPAR. AVEC TUBE CATHOD. NORMAL

PM 42-47
PM 42-48
PM 37-47

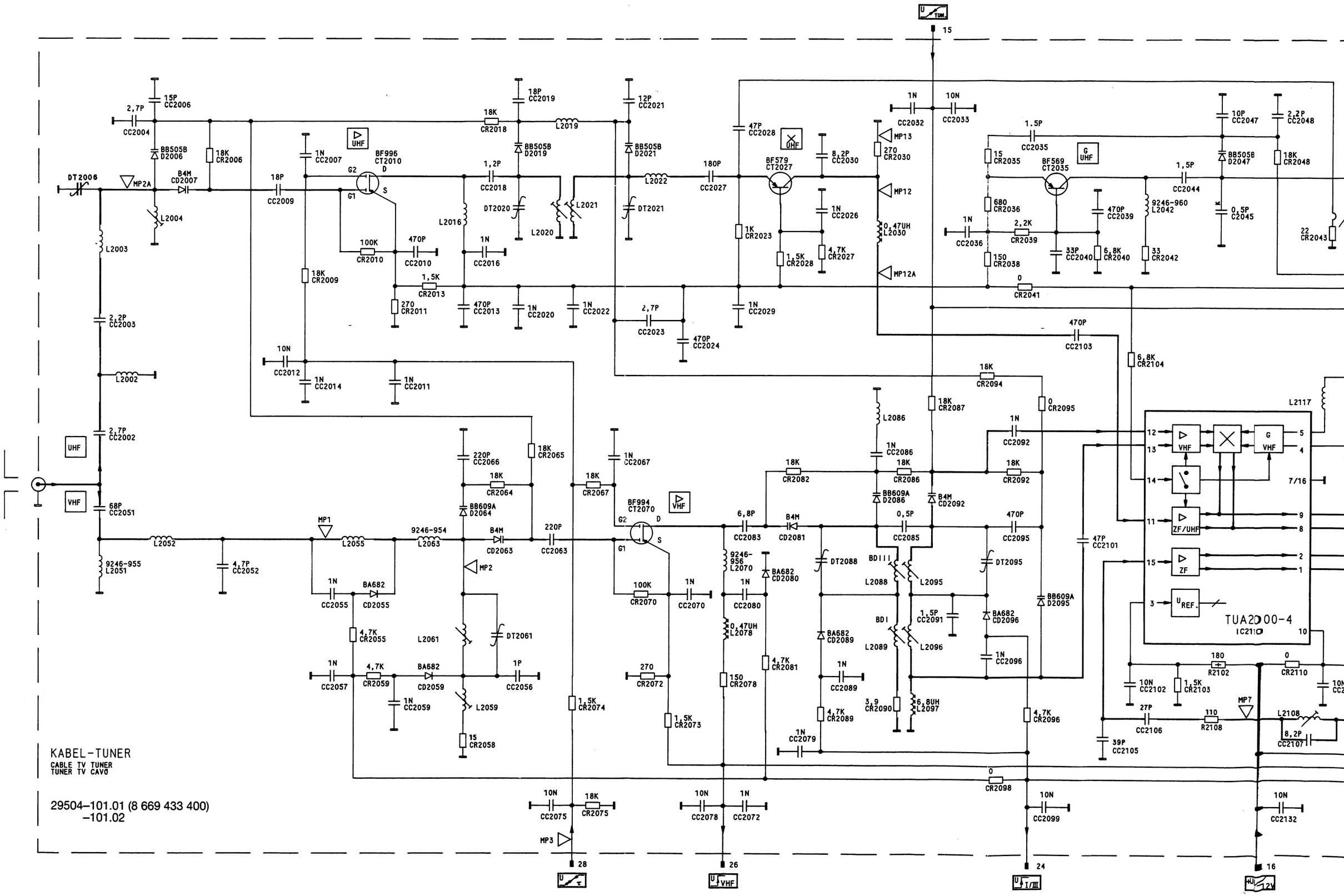
VERS.B

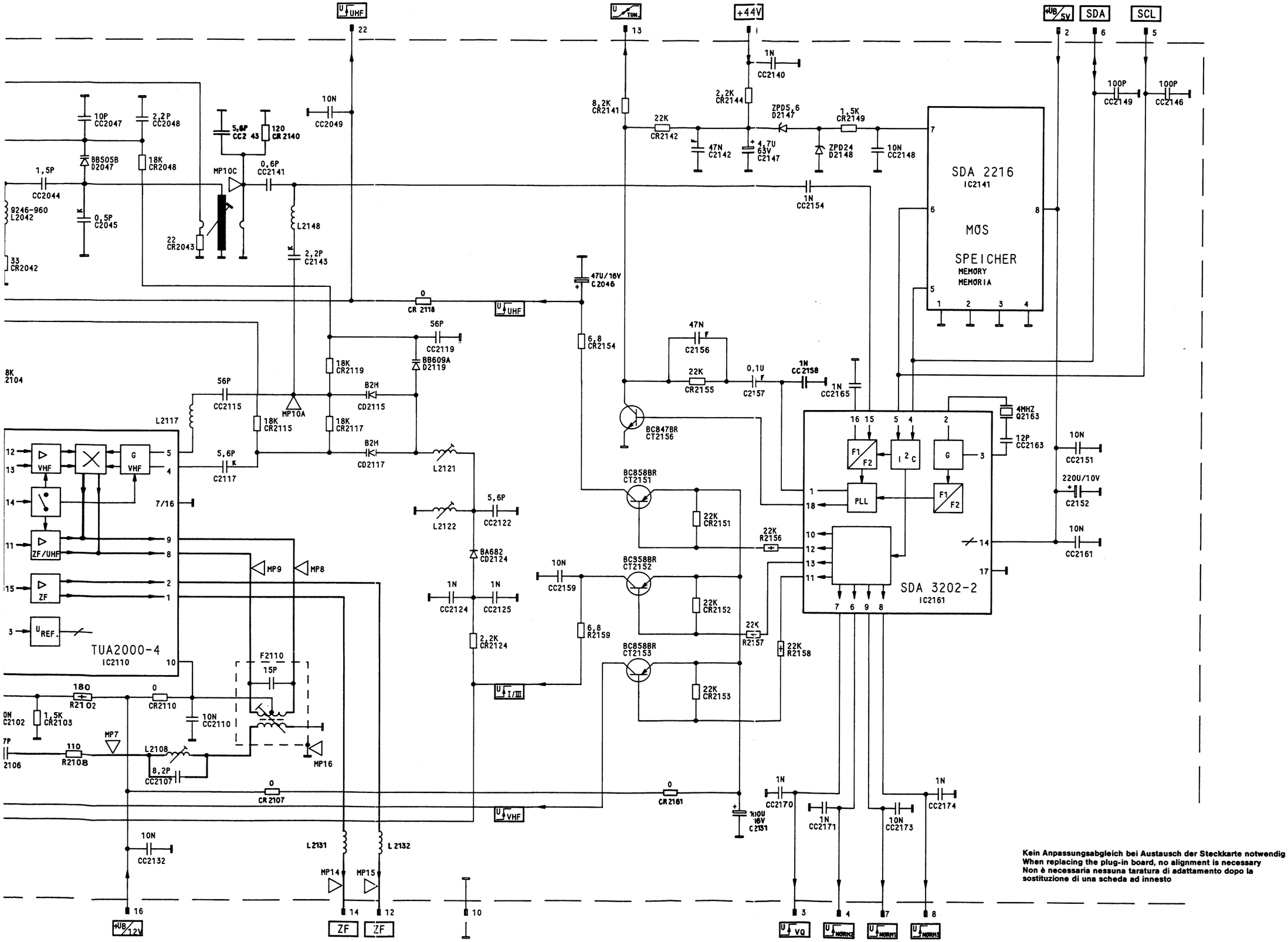
GER. MIT RECHTECK ROEHRE U. WUERFELGEH.
SETS WITH FULL SQUARE TUBE AND CUBE CABINET
APP. CON CINESC. RETTANG. E MOBILE A CUBO
APPAR. AVEC TUBE A COINS CARRES ET BOITIER CUBIQUE

PM 40-46
PM 45-47
PM 40-48
PM 45-48
PM 55-48

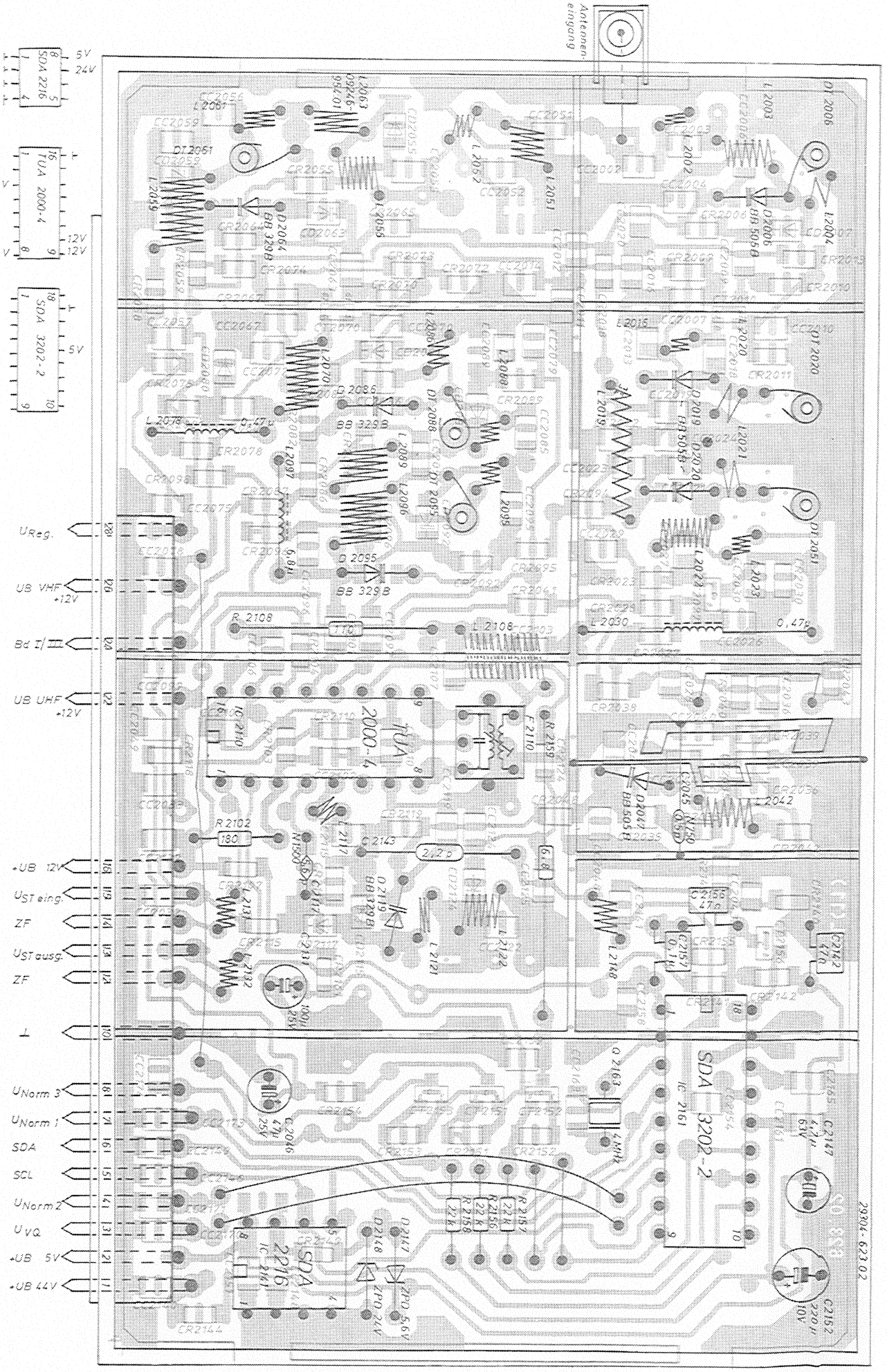
FM 100-22

CHASSIS 29701-046.25 VERS. B 15"
TELAIO -046.26 VERS. B 17"
-046.06 VERS. A 16"
-046.69 VERS. A CTI 16"
-046.75 VERS. A 16" TINTED
-046.79 VERS. A 14"
-046.91 VERS. B CTI 15"
-046.92 VERS. B CTI 17"
-046.99 VERS. B 15" TINTED
-046.88 VERS. B CTI 21" TINTED


KABEL-TUNER
CABLE TV TUNER
TUNER TV CAVO
29504-101.01 (8 669 433 400)
-101.02
TUA2000-4
IC2110
DT2006
MP2A
L2003
L2002
L2004
2,7P CC2002
68P CC2051
9246-955 L2051
L2052
4,7P CC2052
15P CC2006
2,7P CC2004
BB505B D2006
18K CR2006
B4M CD2007
18P CC2009
1N CC2007
BF996 CT2010
18K CR2009
100K CR2010
470P CC2010
270 CR2011
1,5K CR2013
10N CC2012
1N CC2014
1N CC2011
18K CR2018
18P CC2019
L2019
BB505B D2019
1,2P CC2018
DT2020
L2020
L2016
1N CC2016
470P CC2013
1N CC2020
1N CC2022
12P CC2021
BB505B D2021
L2022
DT2021
2,7P CC2023
470P CC2024
180P CC2027
47P CC2028
BF579 CT2027
1K CR2023
1,5K CR2028
8,2P CC2030
1N CC2026
4,7K CR2027
1N CC2029
1N CC2032
10N CC2033
MP13
270 CR2030
MP12
0,47UH L2030
MP12A
1,5P CC2035
15 CR2035
BF569 CT2035
680 CR2036
1N CC2036
2,2K CR2039
150 CR2038
0 CR2041
470P CC2039
33P CC2040
6,8K CR2040
9246-960 L2042
33 CR2042
1,5P CC2044
10P CC2047
BB505B D2047
0,5P C2045
2,2P CC2048
18K CR2048
22 CR2043
470P CC2103
6,8K CR2104
18K CR2094
0 CR2095
18K CR2087
L2086
1N CC2086
18K CR2086
BB609A D2086
B4M CD2092
1N CC2092
18K CR2092
18K CR2082
L2117
12
13
14
11
15
3
VHF
ZF/UHF
ZF
U REF.
G VHF
5
4
7/16
9
8
2
1
10
47P CC2101
BB609A D2095
470P CC2095
0,5P CC2085
DT2095
BA682 CD2096
1N CC2096
DT2088
BD III
L2088
L2095
1,5P CC2091
BD I
L2089
L2096
BA682 CD2089
1N CC2089
4,7K CR2089
3,9 CR2090
6,8UH L2097
4,7K CR2096
1N CC2079
0 CR2098
10N CC2099
6,8P CC2083
B4M CD2081
9246-956 L2070
BA682 CD2080
0,47UH L2078
150 CR2078
4,7K CR2081
1N CC2080
100K CR2070
1N CC2070
270 CR2072
1,5K CR2073
1,5K CR2074
18K CR2067
1N CC2067
BF994 CT2070
220P CC2066
18K CR2064
BB609A D2064
18K CR2065
220P CC2063
B4M CD2063
9246-954 L2063
L2055
MP1
MP2
1N CC2055
BA682 CD2055
4,7K CR2055
L2061
DT2061
1N CC2057
4,7K CR2059
BA682 CD2059
1P CC2056
1N CC2059
L2059
15 CR2058
10N CC2075
18K CR2075
MP3
10N CC2078
1N CC2072
10N CC2102
1,5K CR2103
180 R2102
0 CR2110
27P CC2106
110 R2108
MP7
L2108
8,2P CC2107
39P CC2105
10N CC2132
U TUN.
U VHF
U I/III
+U 2V
15
28
26
24
16

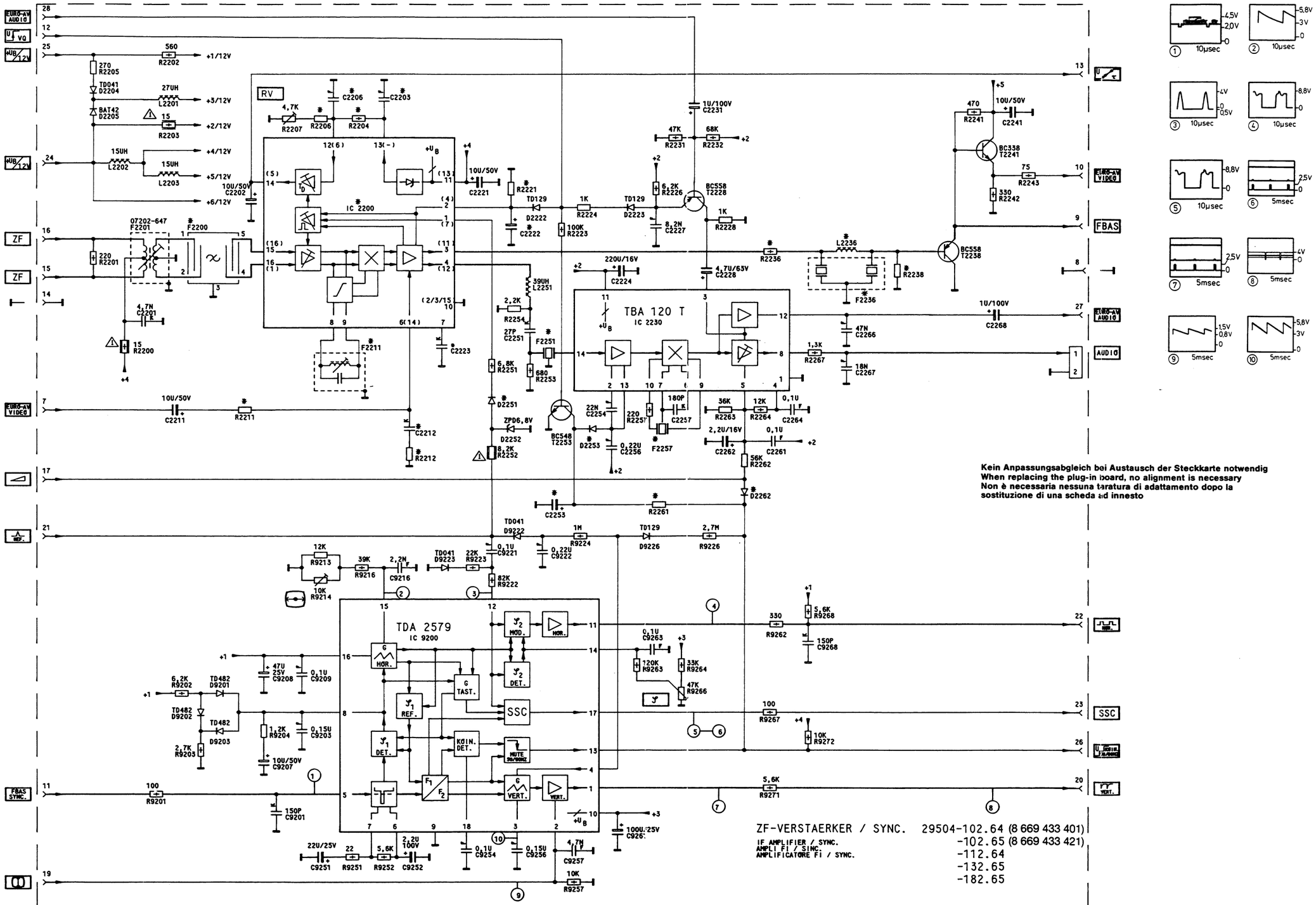


Kein Anpassungsabgleich bei Austausch der Steckkarte notwendig
When replacing the plug-in board, no alignment is necessary
Non è necessaria nessuna taratura di adattamento dopo la sostituzione di una scheda ad innesto



Chip - Kabeltuner 29504-101.01

29504-101.01



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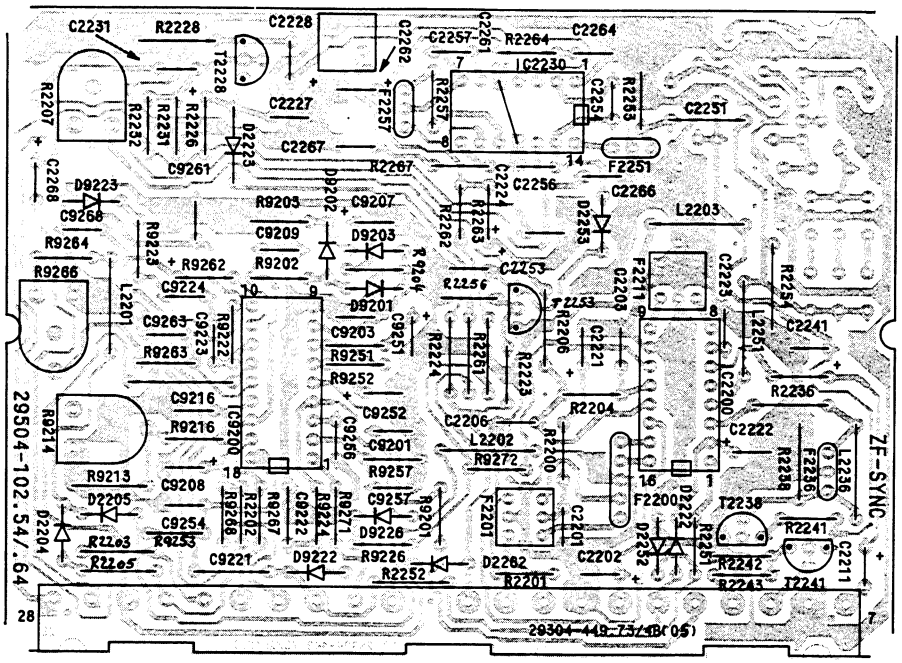
When replacing the plug-in board, no alignment is necessary
Non è necessaria nessuna taratura di adattamento dopo la sostituzione di una scheda ad innesto

*	IC2200	F2200	F2211	F2236	F2251	F2257	C2203	R2204	C2206	R2206	R2211	C2212	R2221	C2222	C2223	R2236	R2238	D2251	C2253	D2253	R2261	D2262	R2212	L2236
-102.64 -112.64	TDA5510-2	OFW G1958 OFW J1952	07202-304	TPS5,SMD TPS6,SMD	SFE5,5 SFE6,0	CDA5,5 CDA6,0	0,1U	5,6K	4,7N	1,8K	330		—	1U/63V	1N	220	1,1K	—	2,2U/63V	TD129	47K	TD129	—	15UH 12UH
-102.65	TDA4442	OFW G1958	19202-185	TPS5,SMD	SFE5,5	CDA5,5	—	—	—	—●—	470	56P	100K	4,7U	—	390	1,5K	TD129	2,2U/63V	TD129	47K	TD129	680	15UH
-132.65	TDA4442	OFW M1952	07202-670	TPS4,SMC	SFE4,5	CDA4,5	—	—	—	—●—	470	56P	100K	4,7U/63V	—	300	1,1K	TD129	—	—●—	—	—	680	15UH
-182.65	TDA4442	OFW CCIR	19202-185	TPS5,SMD	SFE5,5	CDA5,5	—	—	—	—●—	470	56P	100K	4,7U/63V	—	390	1,5K	TD129	—	—●—	—	TD129	680	15UH

ZF-Modul 8 619 433 401/421
IF Module
Modulo FI



FARB-RGB 29504-105.21 (8 669 433 422)
-105.23

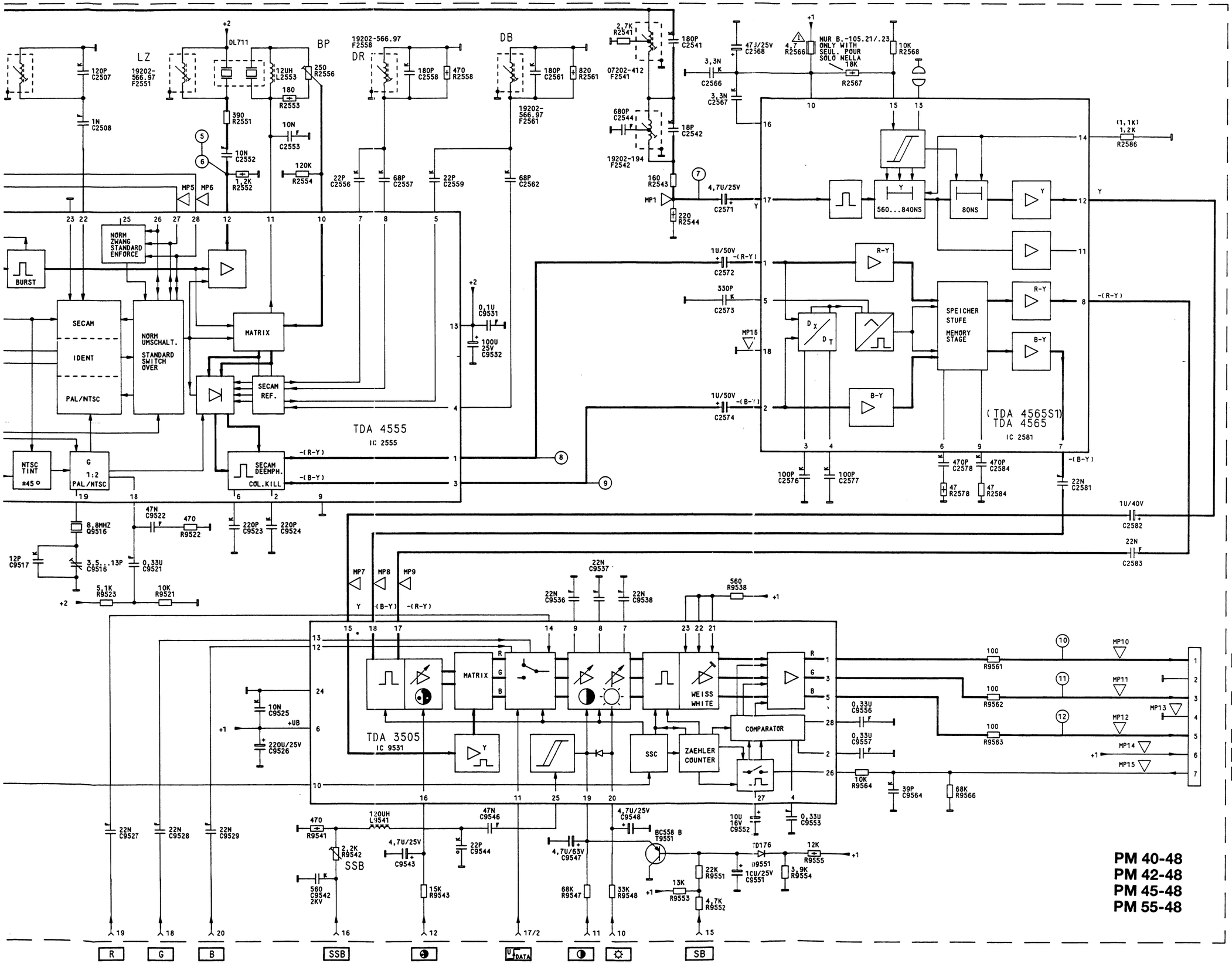
COLOUR / RGB
COULEUR / RVB
COLORE / RVB

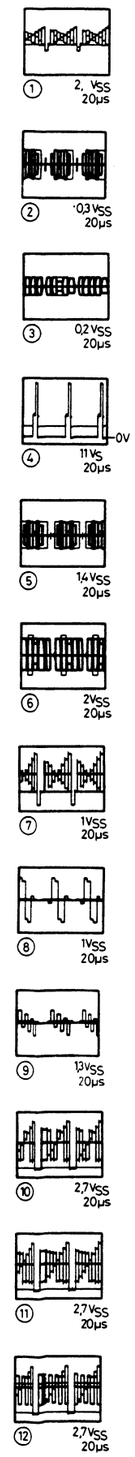
TDA 4555
IC 2555

TDA 3505
IC 9531

NUR B.-105.21/.23
ONLY WITH
SEUL. POUR
SOLO NELLA

NUR BEI -105.23
ONLY WITH
SEUL POUR
SOLO NELLA


LZ
19202-566.97 F2551
DL711
BP
12UH L2553
250 R2556
180 R2553
390 R2551
10N C2552
1.2K R2552
120K R2554
10N C2553
120P C2507
1N C2508
DR
19202-566.97 F2558
180P C2558
470 R2558
22P C2556
68P C2557
22P C2559
DB
180P C2561
820 R2561
68P C2562
19202-566.97 F2561
2,7K R2541
07202-412 F2541
180P C2541
680P C2544
18P C2542
19202-194 F2542
160 R2543
220 R2544
4,7U/25V C2571
47J/25V C2568
3,3N C2566
3,3N C2567
4,7 R2566
NUR B.-105.21/.23 ONLY WITH SEUL. POUR SOLO NELLA
10K R2568
18K R2567
(1,1K) 1,2K R2586
560...840NS
80NS
Y
R-Y
B-Y
SPEICHER STUFE
MEMORY STAGE
1U/50V -(R-Y) C2572
330P C2573
1U/50V -(B-Y) C2574
100P C2576
100P C2577
470P C2578
470P C2584
47 R2578
47 R2584
22N C2581
1U/40V C2582
22N C2583
0,1U C9531
100U 25V C9532
NORM ZWANG STANDARD ENFORCE
BURST
SECAM
IDENT
PAL/NTSC
NORM UMSCHALT. STANDARD SWITCH OVER
MATRIX
SECAM REF.
SECAM DEEMPH. COL.KILL
TDA 4555
IC 2555
(TDA 4565S1)
TDA 4565
IC 2581
NTSC TINT ±45°
G 1:2 PAL/NTSC
8,8MHZ Q9516
12P C9517
3,5...13P C9516
47N C9522
470 R9522
0,33U C9521
5,1K R9523
10K R9521
220P C9523
220P C9524
MP5
MP6
MP7
MP8
MP9
MP10
MP11
MP12
MP13
MP14
MP15
MP16
22N C9536
22N C9537
22N C9538
560 R9538
TDA 3505
IC 9531
MATRIX
WEISS WHITE
SSC
ZAEHLER COUNTER
COMPARATOR
10N C9525
220U/25V C9526
22N C9527
22N C9528
22N C9529
120UH L9541
470 R9541
2,2K R9542
SSB
560 C9542 2KV
4,7U/25V C9543
22P C9544
15K R9543
47N C9546
4,7U/25V C9548
4,7U/63V C9547
BC558 B T9551
68K R9547
33K R9548
13K R9553
22K R9551
4,7K R9552
12K R9555
3,9K R9554
100U 16V C9552
0,33U C9553
0,33U C9556
0,33U C9557
10K R9564
39P C9564
68K R9566
100 R9561
100 R9562
100 R9563
BILDROHRRLATTE
CRT BASE
PIASTRA CINESCOPIO
C.I. TUBE CATHOD.
R
G
B
+12V
SW
PM 40-48
PM 42-48
PM 45-48
PM 55-48


1 2, VSS 20µs
2 0,3VSS 20µs
3 0,2VSS 20µs
4 11VS 20µs 0V
5 14VSS 20µs
6 2VSS 20µs
7 1VSS 20µs
8 1VSS 20µs
9 13VSS 20µs
10 2,7VSS 20µs
11 2,7VSS 20µs
12 2,7VSS 20µs

1. **Weißabgleich**
   - FuBK-Testbild einspeisen.
   - ◑ min., ☼ nom, ◑ max. einstellen.
   - Regler VG und VB (Bildrohrplatte) so einstellen, daß keine Verfärbungen in den Grauwerten sichtbar sind.

2. **Sperrpunktabgleich**
   Eine manuelle Einstellung ist nicht möglich, da die Steckkarte eine automatische Dunkelstromregelung besitzt. Kontrolle des Sperrpunkts (Oszilloskop erforderlich).
   - FuBK-Testbild einspeisen.
   - ◑ min., ☼ nom., ◑ min., einstellen.
   - Tastkopf an den Kollektoren der Transistoren T 736, T 756, T 776 anhängen (Bildrohrplatte). Die Schwarzwerte der drei Kathodensignale liegen bei ca. 140-150V.

3. **Einstellungen im Farbkanal**
   - PAL-Testbild einspeisen.
   - FK nom., H nom. K max. einstellen.
   - IC-Pin 28 vom TDA 4555 mit +12V verbinden.
   - IC-Pin 17 vom TDA 4555 mit Masse verbinden.
   - Mit Trimmer C9516 die durchlaufenden Farbbalken zum Stehen bringen.
   - Kurzschlußbrücken entfernen.
   - Tastkopf an MP 12, mit Regler BP und Spule LZ die Doppelbilder des B-Signals zur Deckung bringen.
   - SECAM-Testbild einspeisen.
   - Tastkopf an Pin 1 vom TDA 4555 anschließen, mit Spule DR Nullinie des (R-Y)-Signals auf Zeilenniveau bringen.
   - Tastkopf an Pin 3 vom TDA 4555 anschließen, mit Spule DB Nullinie des (B-Y)-Signals auf Zeilentastniveau bringen.
   - Spule F 2521 so einstellen, daß das (B-Y)-Signal keine Überschwinger hat.

4. **Strahlstrom**
   - Der Regler "SSB" wird werkseitig auf Mittelwert eingestellt.
   - Sollte bei vollem Kontrast und normal eingestellter Helligkeit in Spitzenweißfeldern des Sendertestbildes eine Defokussierung (starke Unschärfe bei weißen Schriftzeichen in Bildröhrenmitte) auftreten, so muß mit Regler "SSB" auf scharfe Schriftkonturen eingestellt werden (Reduzierung des Spitzenstrahlstromes).

1. **White level adjustment**
   - Display colour bar test pattern.
   - Set ◑ to min., ☼ to nom., ◑ to max.
   - Adjust presets VG and VB (CRT socket board) so that the picture does not show any colouration.

2. **Adjustment of cut-off point**
   Manual adjustment is not possible, as the circuit board employs an automatic dark current control circuit.
   To check cut-off point (oscilloscope required), proceed as follows:
   - Display colour bar test pattern.
   - Set ◑ to min., ☼ to nom., ◑ to min.
   - Connect test probe to collectors of T 736, T 756, T 776 (CRT socket board).
     The black leves of the three cathode signals should be 140-150V.

3. **Adjustments in chroma channel**
   - Display PAL test pattern.
   - Adjust colour level and brightness to nominal value, contrast to maximum.
   - Connect pin 28 of IC TDA 4555 to +12V supply.
   - Connect pin 17 to IC TDA 4555 to chassis.
   - Adjust trimmer C9516 for stationary pattern in colour bars.
   - Remove wire links.
   - Connect test probe to test point MP 12. LBring the double image produced by the B-signal to coincidence by adjusting the preset BP and the coil LZ.
   - Display SECAM test pattern.
   - Connect test probe to pin 1 of IC TDA 4555.
   - Use coil DR to align zero level of the (R-Y) signal with the line black level.
   - Connect test probe to pin 3 of IC TDA 4555.
   - Use coil DB to align zero level of the (B-Y) signal with the line black level.
   - Adjust coil F2521 so that the (B-Y) signal is free of overshooting.

4. **Beam current**
   - During manufacture the control "SSB" is adjusted to middle value.
   - If during max. contrast and normal brightness adjustment the peak-white fields of the test picture should be defocused (in the middle of the screen white letters are very distorted) the contours of the letters must be adjusted using control "SSB" (reducing the peak beam current).

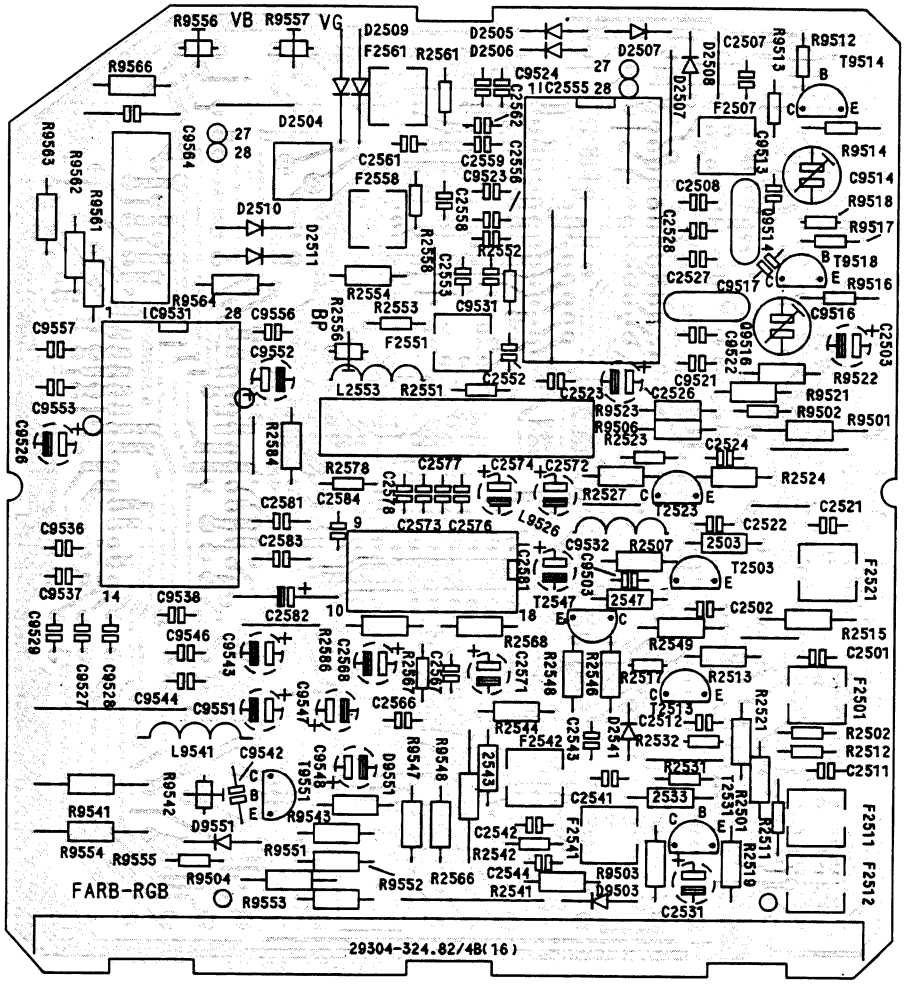
1. **Taratura del bianco**
   - Applicare un monoscopio FuBK.
   - Regolare ◑ al minimo, ☼ sul valore nominale e ◑ al massimo.
   - Con i regolatori VG e VB (piastra cinescopio) eliminare eventuali macchie di colore.

2. **Taratura del punto di blocco**
   Una regolazione manuale non è possibile, poiché questa scheda incorpora una regolazione automatica della corrente d'interdizione.
   Controllo del punto di blocco (é necessario un oscilloscopio):
   - Applicare un monoscopio FuBK.
   - Regolare ◑ al minimo, ☼ sul valore nominale e ◑ al minimo.
   - Collegare la sonda ai collettori dei transistori T 736, T 756, T 776 (piastra cinescopio).
     Valore nero dei tre segnali catodici ca. 140-150V.

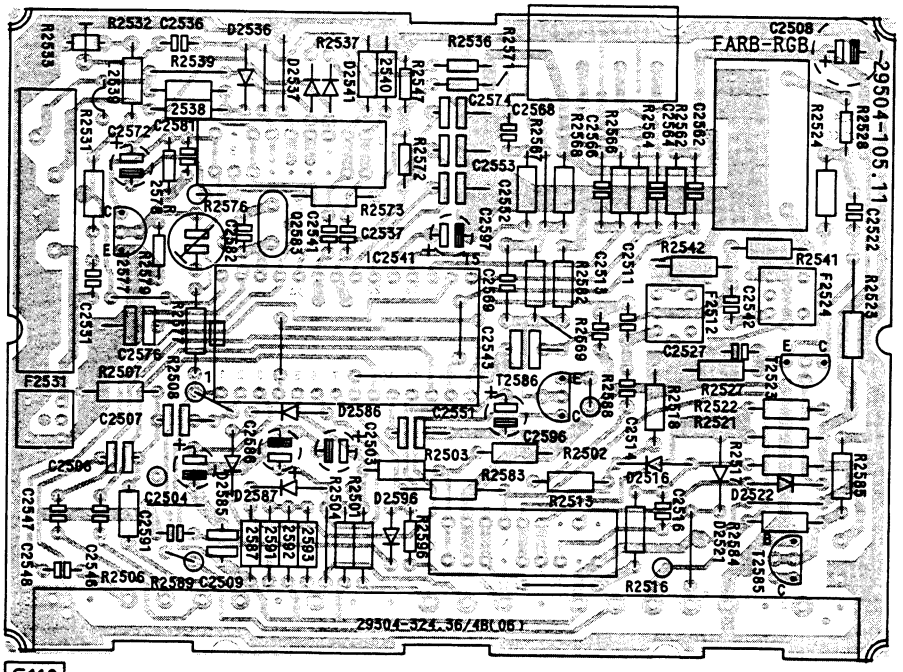
3. **Regolazione del canale colore**
   - Applicare un monoscopio PAL.
   - Regolare FK e H sul valore nominale, K al massimo.
   - Sull'integrato TDA 4555 collegare pin 28 a +12V.
   - Sull'integrato TDA 4555 collegare pin 17 a massa.
   - Con C9516 fermare le barre colorate scorrevoli.
   - Togliere i cortocircuiti.
   - Collegare la sonda a MP 12, con il regolatore BP e la bobina LZ portare a copertura le immagini doppie del segnale B.
   - Applicare un monoscopio SECAM.
   - Collegare la sonda al pin 1 dell'integrato TDA 4555, con la bobina DR portare la linea zero del segnale (R-Y) sul livello della frequenza di riga.
   - Collegare la sonda al pin 3 dell'integrato TDA 4555, con la bobina DB portare la linea zero del segnale (B-Y) sul livello della frequenza di riga.
   - La bobina F2581 applicarla cosi in modo che il segnale (B-Y) sia chiaro.

4. **Corrente catodica**
   - Il regolatore "SSB" viene regolato già in fabbrica su valori medi.
   - Se con il contrasto al massimo ed una regolazione normale della luminosità dovesse presentarsi una sfocalizzazione nei campi ultrabianchi del cinescopio (le lettere biancle al centro del cinescopio risultano molto sfuocate), agire sul regolatore "SSB" per mettere a fuoco i contorni delle lettere (riducendo la corrente catodica di picco).

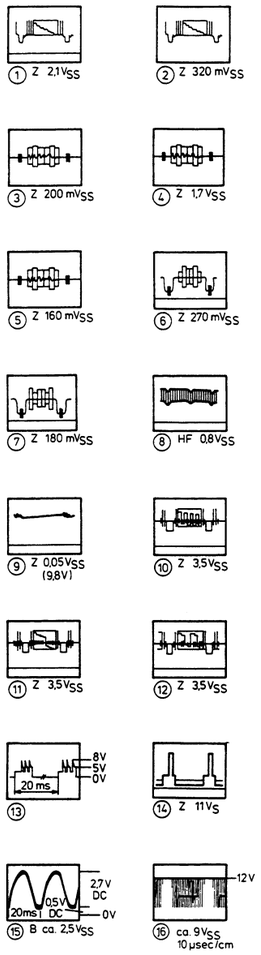
Farb/RGB-Modul 8 669 433 422
Chroma/RGB Module
Modulo Colore/RVB

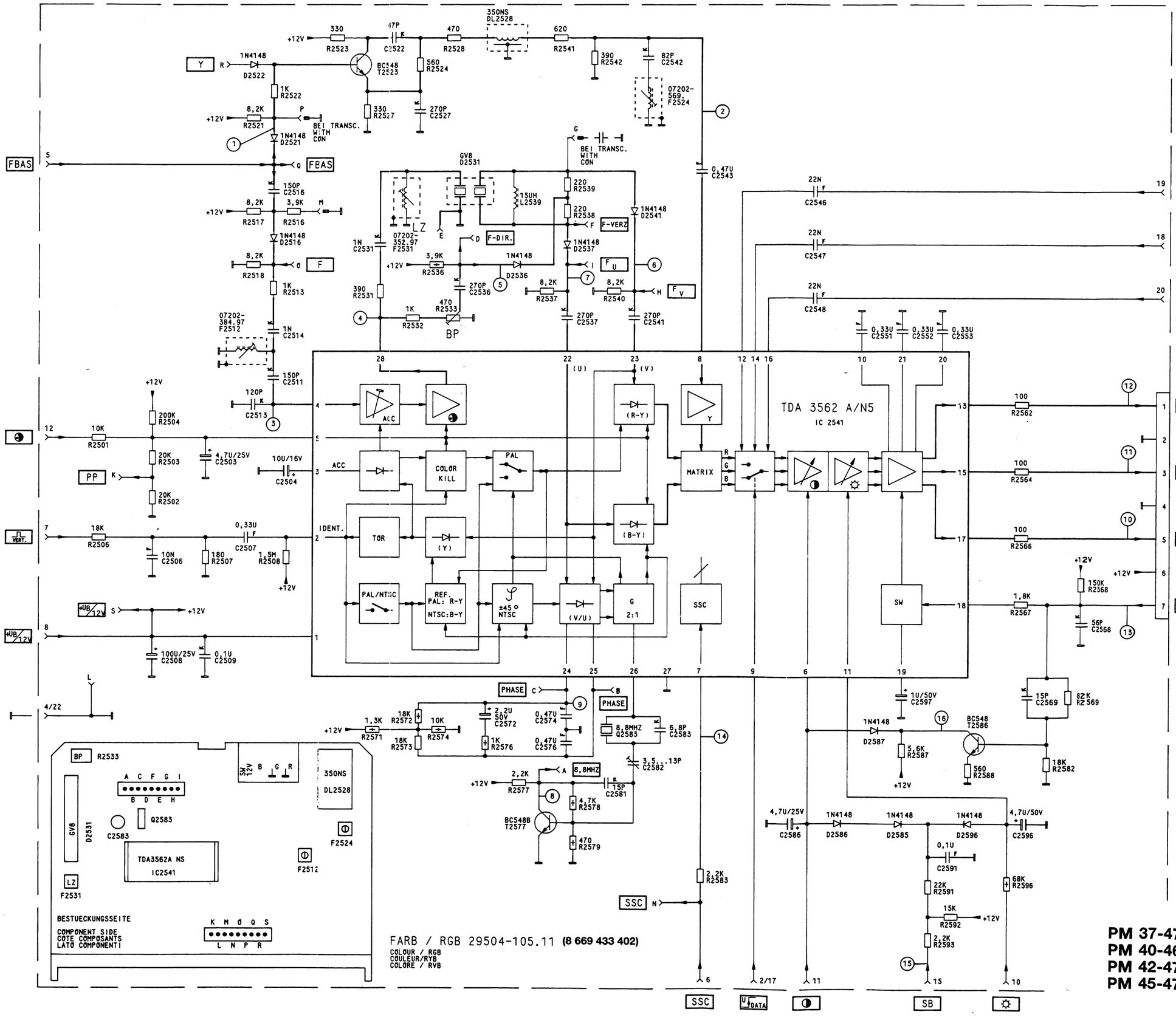


Farb/RGB-Modul 8 669 433 402
Chroma/RGB Module
Modulo Colore/RVB

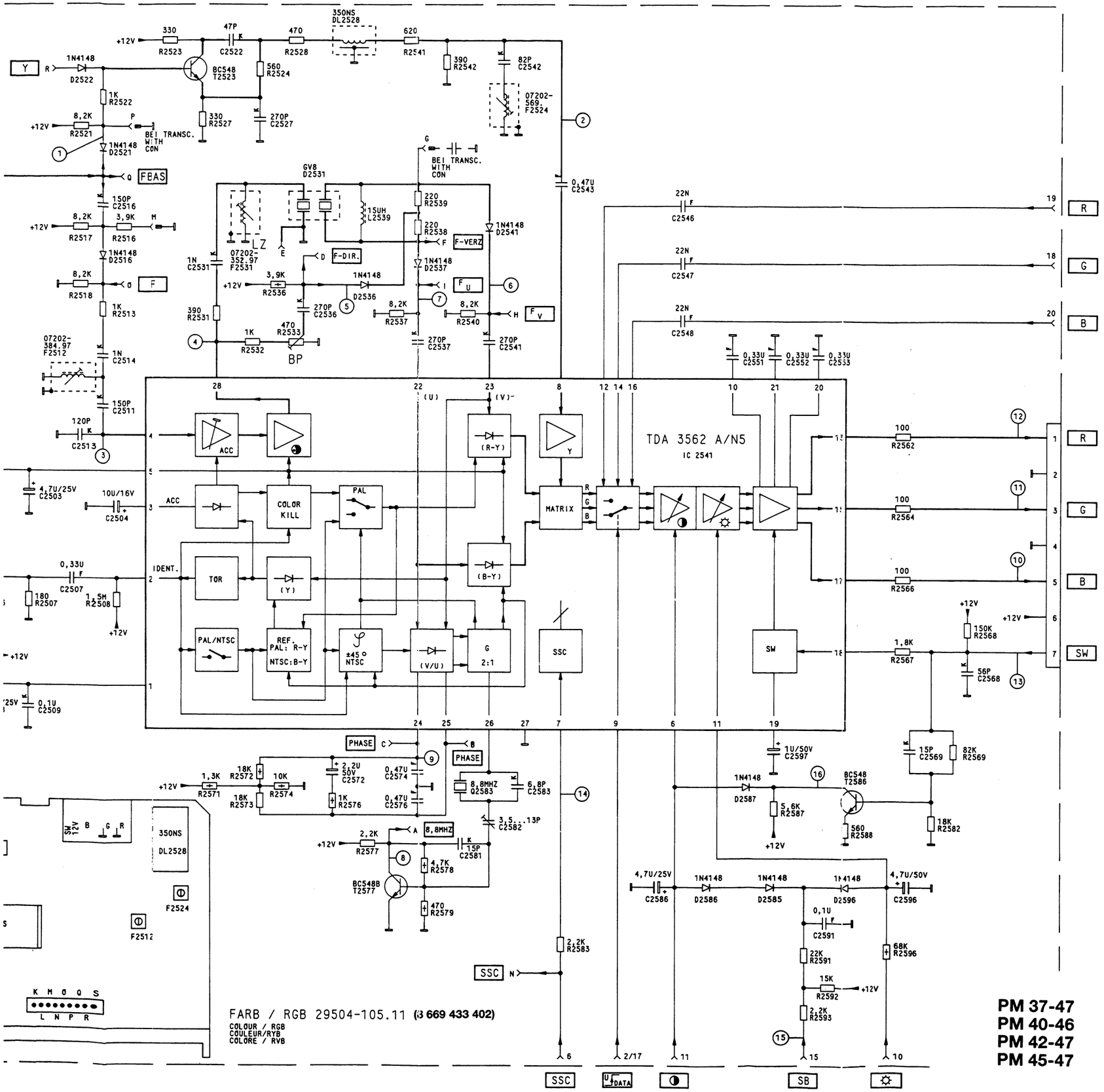


G110


① Z 2,1VSS
② Z 320 mVSS
③ Z 200 mVSS
④ Z 1,7 VSS
⑤ Z 160 mVSS
⑥ Z 270 mVSS
⑦ Z 180 mVSS
⑧ HF 0,8VSS
⑨ Z 0,05VSS (9,8V)
⑩ Z 3,5VSS
⑪ Z 3,5VSS
⑫ Z 3,5VSS
⑬ 8V 5V 0V 20 ms
⑭ Z 11VS
⑮ B ca. 2,5VSS 2,7V DC 0,5V DC 0V
⑯ ca. 9VSS 10 µsec/cm 12V



PM 37-47
PM 40-46
PM 42-47
PM 45-47

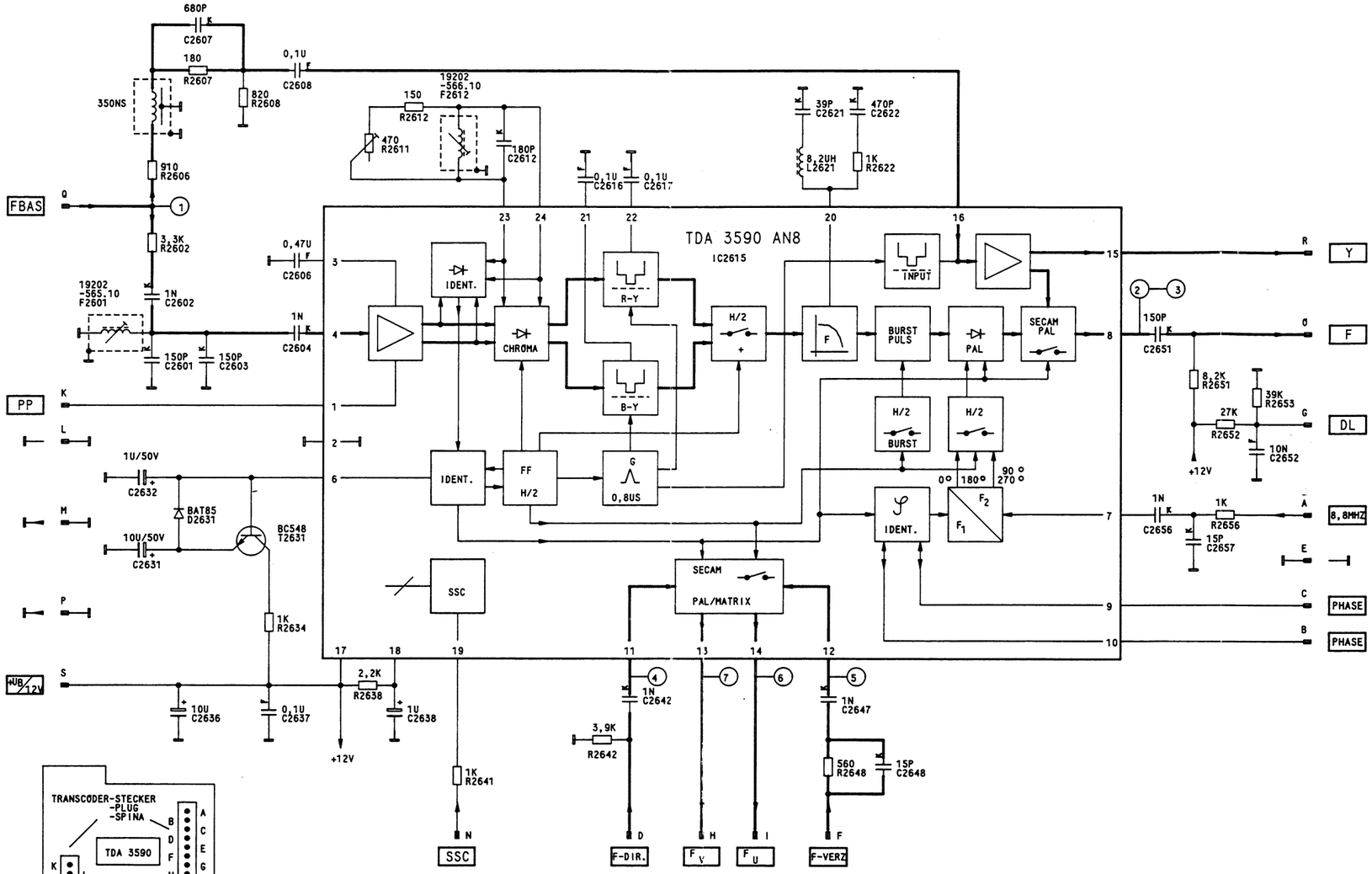


PM 37-47
PM 40-46
PM 42-47
PM 45-47

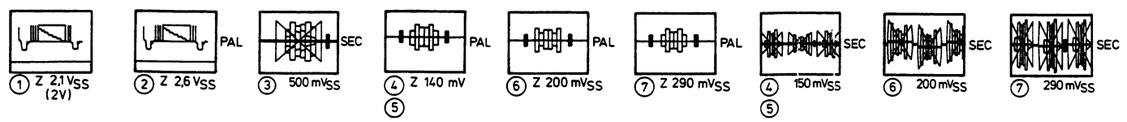
1. Weißabgleich
   - FuBK-Testbild einspeisen.
   - ◑min., ☼nom., ◑max., einstellen.
   - Regler VR und VG (Bildrohrplatte) so einstellen, daß keine Verfärbungen in den Grauwerten sichtbar sind.
2. Sperrpunktabgleich
   Eine manuelle Einstellung ist nicht möglich, da die Steckkarte eine automatische Dunkelstromregelung besitzt. Kontrolle des Sperrpunkts (Oszilloskop erforderlich).
   - FuBK-Testbild einspeisen.
   - ◑min., ☼nom., ◑min., einstellen.
   - Tastkopf an den Kollektoren der Transistoren T741, T761, T781 anhängen (Bildrohrplatte). Die Schwarzwerte der drei Kathodensignale liegen bei 90 – 100 V (15", 16") und 140 – 150 V (18", 20").
3. Einstellungen im Farbkanal
   - FuBK-Testbild einspeisen.
   - ◑nom., ☼nom., ◑nom. einstellen.
   - Am IC TDA 3562 Pin 1 mit Pin 5 und Pin 24 mit Pin 25 kurzschließen.
   - Mit Trimmer 2582 die durchlaufenden Farbbalken zum Stehen bringen, Kurzschlußbrücken entfernen.
   - Tastkopf am Pin 17 des IC TDA 3562 einhängen.
     Mit Regler BP und Spule LZ die Doppelbilder des B-Signals zur Deckung bringen.

1. White level adjustment.
   - Display colour bar test pattern.
   - Set ◑ to min., ☼ to nom., ◑ to max.
   - Adjust presets VR and VG (CRT socket board) so that the picture does not show any colouration.
2. Adjustment of cut-off point.
   Manual adjustment is not possible, as the circuit board employs an automatic dark current control circuit.
   To check cut-off point (oscilloscope required), proceed as follows:
   - Display colour bar test pattern.
   - Set ◑ to min., ☼ to nom., ◑ to min.
   - Connect test probe to collectors of T741, T761, T781 (CRT socket board).
     The black levels of the three cathode signals should be 90 – 100 V (15", 16") and 140 – 150 V (18", 20").
3. Colour oscillator and PAL adjustments.
   - Inject colour bar test pattern.
   - Adjust to ◑, ☼, ◑ suit view conditions.
   - On the IC TDA 3562, short circuit pin 1 with pin 5 and pin 24 with 25.
   - With trimmer 2582 adjust the until colours are correct. Remove short circuits.
   - Attach probe to pin 17 of the IC TDA 3562.
   - With control BP and coil LZ, adjust the double images of the B signal to coincide.

1. Taratura del bianco
   - Applicare un monoscopio FuBK.
   - Regolare ◑ al minimo, ☼ sul valore nominale e ◑ al massimo.
   - Con VR e VG (piastra cinescopio) eliminare eventuali macchie di colore.
2. Taratura del punto di blocco.
   Una regolazione manuale non è possibile, poichè questa scheda incorpora una regolazione automatica della corrente d'interdizione.
   Controllo del punto di blocco (è necessario un oscilloscopio):
   - Applicare un monoscopio FuBK.
   - Regolare ◑ al minimo, ☼ sul valore nominale e ◑ al minimo.
   - Collegare la sonda ai collettori dei transistori T741, T761, T781 (piastra cinescopio).
     Valore nero dei tre segnali catodici 90 – 100 V (15", 16") e 140 – 150 V (18", 20").
3. Regolazioni dell'oscillatore colore e PAL
   - Applicare un monoscopio FuBK.
   - Regolare ◑, ☼ ed ◑ sul valore nominale.
   - Cortocircuitare i terminali 1 e 5 ed i terminali 24 e 25 dell'IC TDA 3562.
   - Fermare le barre colorate scorrevoli con il trimmer 2582 e togliere i cortocircuiti.
   - Collegare la sonda dell'oscilloscopio al terminale 17 dell'IC TDA 3562.
     Con il regolatore BP e la bobina LZ portare a copertura le immagini doppie del segnale B.



PAL/SECAM TRANSCODER 29504-146.01 (8 669 433 413)



Wird die FARB/RGB-Steckkarte 29504-105.11 durch den PAL/SECAM-Transcoder 29504-146.01 auf SECAM nachgerüstet ist kein zusätzlicher Abgleich notwendig.

If the colour/RGB board 29504-105.11 is converted for SECAM with the PAL/SECAM Transcoder 29504-146.01, no additional alignment is necessary.

Se la scheda colore/RGB 29504-105.11 viene trasformata in SECAM con il transcoder PAL/SECAM 29504-146.01, non occorre effettuare nessun'altra taratura.

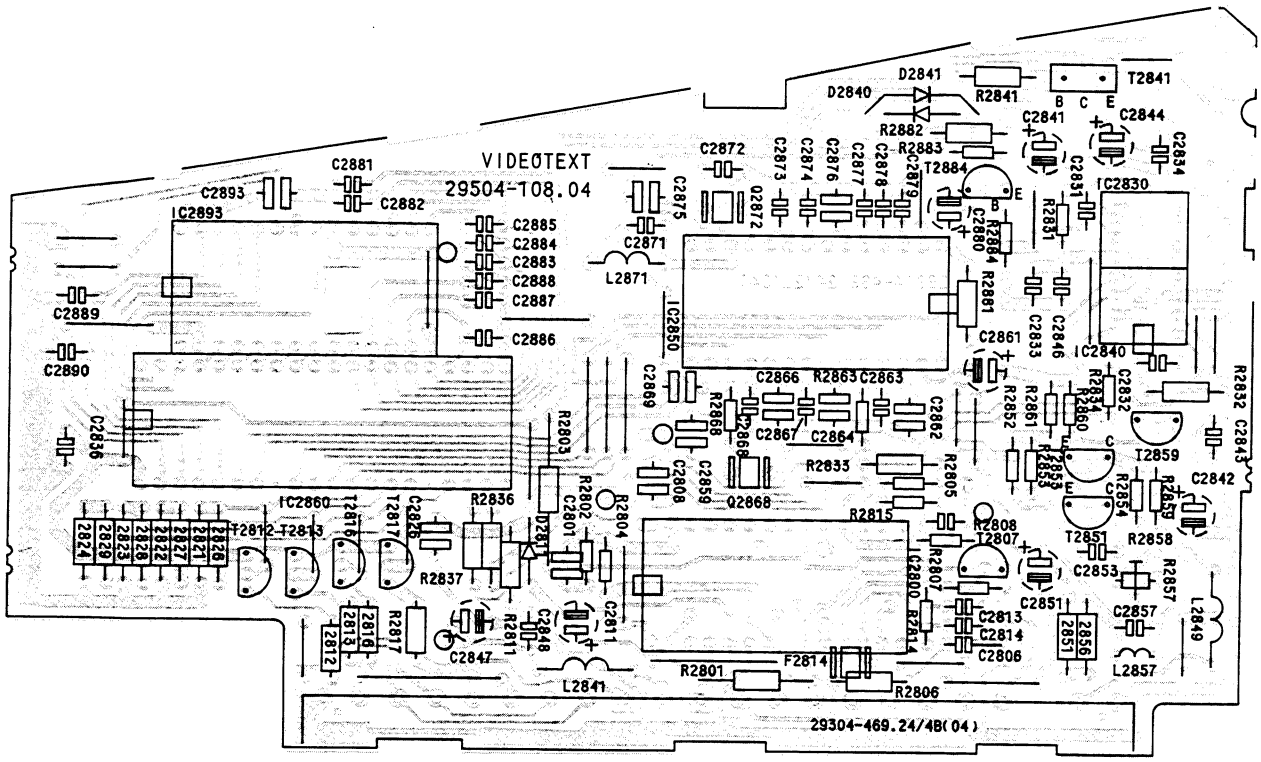
VIDEOTEXT-DECODER 29504-108.04 (8 669 433 414)

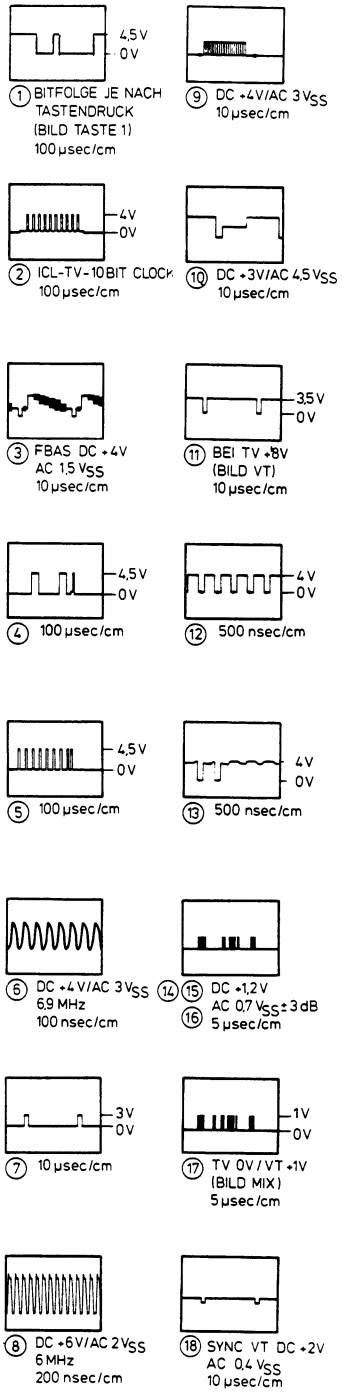
TELETEXT DECODER
DECODER TELEVIDEO

*	IC 2830	IC 2840	C 2831	C 2832	C 2834	R 2831	R 2832	R 2849	D 2849	R 2804
	SDA 2216 E^2PROM(1K)	SDA 2216 E^2PROM(1K)	——	——	0,1U	——	——	4,7K	ZPD 24	——
	SDA 2516 E^2PROM(1K)	SDA 2516 E^2PROM(1K)	——	——	0,1U	——	——	——	——	——
	PCD 8572 E^2PROM(1K)	PCD 8572 E^2PROM(1K)	2,7N	2,7N	0,1U	10K	10K	——	——	——
	PCD 8582 E^2PROM(2K)	——	2,7N	——	——	10K	——	——	——	4,7K
	SDA 2526 E^2PROM(2K)	——	——	——	——	——	——	——	——	4,7K

NICHT BEI NOT WITH PAS POUR MANCA NEL
IC 2800
7040 C 54011 NL-2

Videotext-Modul 8 669 433 414
Teletext Module
Modulo Televideo




4,5 V
0 V
① BITFOLGE JE NACH TASTENDRUCK (BILD TASTE 1) 100 µsec/cm
⑨ DC +4 V/AC 3 VSS 10 µsec/cm
4 V
0 V
② ICL-TV-10 BIT CLOCK 100 µsec/cm
⑩ DC +3 V/AC 4,5 VSS 10 µsec/cm
③ FBAS DC +4 V AC 1,5 VSS 10 µsec/cm
3,5 V
0 V
⑪ BEI TV +8 V (BILD VT) 10 µsec/cm
4,5 V
0 V
④ 100 µsec/cm
4 V
0 V
⑫ 500 nsec/cm
4,5 V
0 V
⑤ 100 µsec/cm
4 V
0 V
⑬ 500 nsec/cm
⑥ DC +4 V/AC 3 VSS 6,9 MHz 100 nsec/cm
⑭⑮ DC +1,2 V AC 0,7 VSS ± 3 dB
⑯ 5 µsec/cm
3 V
0 V
⑦ 10 µsec/cm
1 V
0 V
⑰ TV 0 V / VT +1 V (BILD MIX) 5 µsec/cm
⑧ DC +6 V/AC 2 VSS 6 MHz 200 nsec/cm
⑱ SYNC VT DC +2 V AC 0,4 VSS 10 µsec/cm

VT-Nachrüstung und Anpassungsabgleich

Beim Nachrüsten der Videotext-Steckkarte muß die Videotext-Steckerplatte entfernt werden (* siehe Geräteschaltbild im Service Manual).

Der Einsteller R 2857 steht bei Auslieferung auf Linksanschlag (kleinste Höhenanhebung, ca. 2 dB). Treten trotz einwandfreiem Antennensignal Zeichenfehler auf, R 2857 langsam nach rechts verstellen, bis Fehler verschwinden. Nicht weiterdrehen, da Fehlerhäufigkeit wieder zunehmen kann.

Während des Abgleiches ist es notwendig, die Seite 199 ständig neu anzuwählen, da nur so die Seite neu eingelesen wird und eine Beurteilung der Fehlerschwelle möglich ist.

VT (GB: Teletext) instalation and matching adjustment

When fitting the Videotext (GB: Teletext) plug-in board, the Videotext plug plate has to be removed (* see circuit diagram in the Service Manual).

The control R 2857 is set in the fully anti clockwise position when the unit is delivered (smallest treble boost: approx. 2 dB). If, with a perfect aerial signal character faults occur, turn R 2857 slowly clockwise until the faults disappear. Do not turn R 2875 up any further as error rate may increase again.

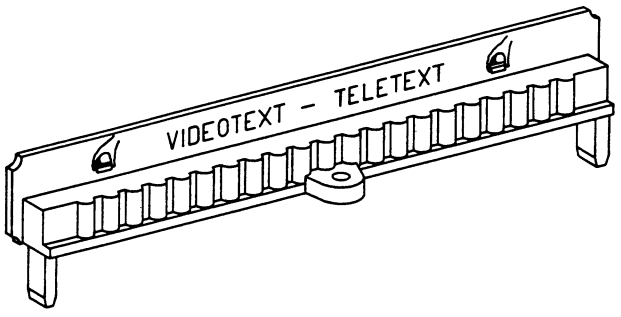
Page 199 must always be selected anew during the adjustment, as only this effects a new read-in of the page making it possible to evaluate the error level.

Montaggio e taratura d'addatamento della scheda ad innesto

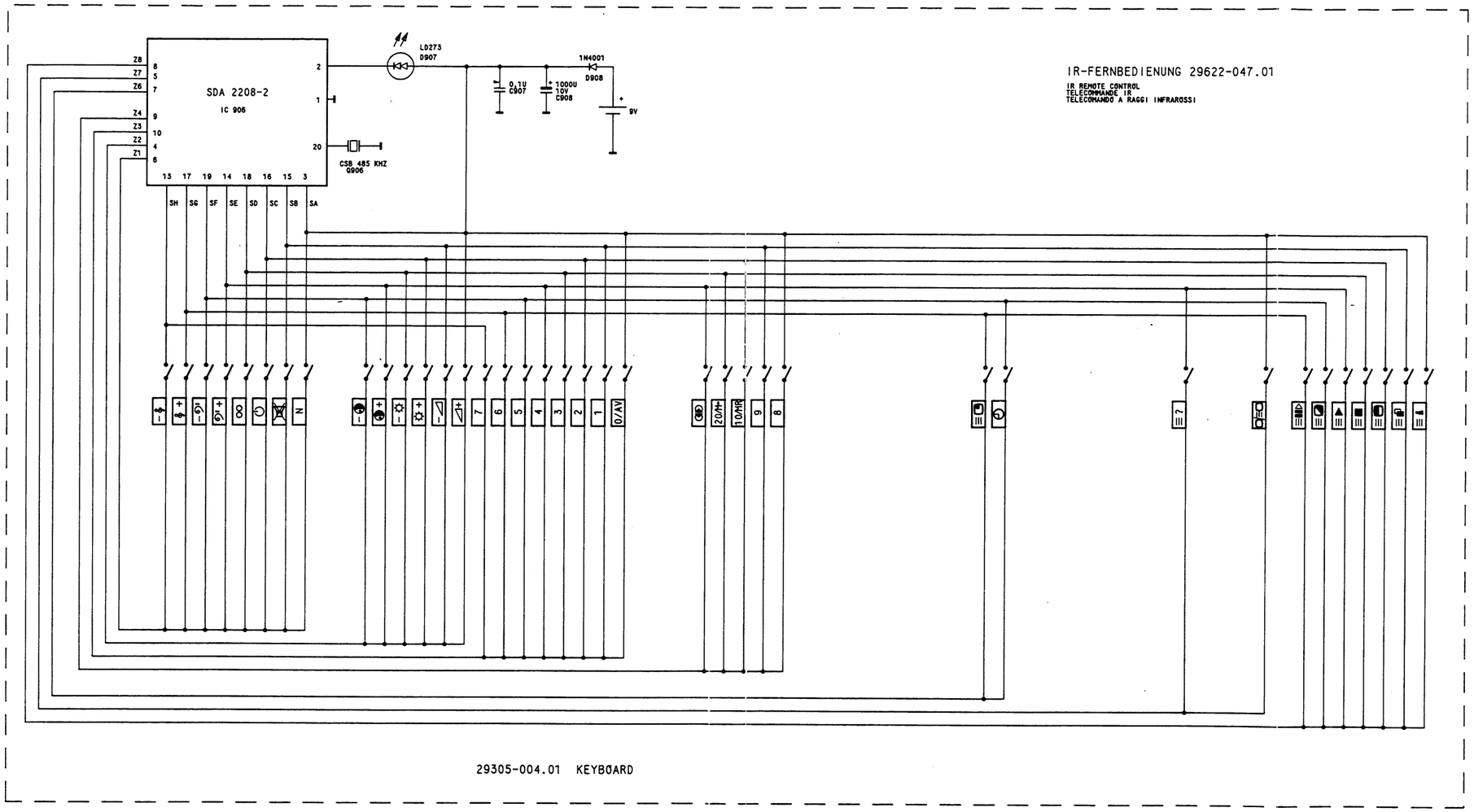
Nel montare la scheda televideo togliere la piastrina televideo (* vedere lo schema del televisore nel manuale di servizio).

Il regolatore R 2857 viene fornito col cursore girato completamente all'estrema sinistra (minima esaltazione delle alte frequenze, ca. 2 dB). Se si manifestano errori di carattere, nonostante un perfetto segnale d'antenna, girare lentamente il cursore di R 2857 verso destra fino ad eliminare gli errori. Non girarlo oltre può riaumentare la presenza degli errori.

Durante la taratura è necessario selezionare ripetutamente la pagina 199, poiché solo così è possibile una nuova immissione della pagina ed una valutazione della soglia degli errori.



Fernbedienung 8 669 493 800
Remote Control
Comando a distanza



Funktionsüberblick

Das Zeilennetzteil hat 2 Merkmale:
- Den Zeilennetztrafo (ZNT) mit einem Ferritkern. Dieser Trafo hat Wicklungen für Netzteil und Zeilenendstufe.
- Die Netzteilfrequenz entspricht der Zeilenfrequenz.

Der ZNT dient der galvanischen Trennung, der Zeilenablenkung und der Erzeugung der Betriebsspannung. Durch feste und lose Kopplung der Wicklungen des ZNT wird erreicht, daß die Betriebsspannungen ausreichend belastbar sind, und keine nennenswerte Rückwirkung auf die Zeilentrafowicklung N-M entsteht.

Die Anlaufschaltung

Die Anlaufspannung erhält IC 655 vom Brückengleichrichter D 621 über R 641. Werden über die Widerstände R 642, 643 und 644 an Pin 2 ca. 10 V erreicht, steuert IC 655 über Pin 3 T 661 an (Voraussetzung: Pin 18 > 10 V).Das Zeilennetzteil schwingt an. Gleichzeitig steigt über Pin 2 die Stromaufnahme, und die Wicklung E/D des ZNT übernimmt die weitere Betriebsspannungsversorgung (D 647, R 647, C 647).

Der Oszillator im IC TDA 3640

Die Steuerimpulse für T 661 erzeugt ein Oszillator, der nach dem Schwellwertprinzip arbeitet. C 653 ist ein extern beschaltetes frequezbestimmendes Glied (Synchronbereich des Oszillators ca. 14-17 kHz). Der Oszillator schwingt so lange frei, bis die Referenzimpulse vom ZNT an Pin 12 größer als +1 V_s sind.
Bei Vollbetrieb (EIN) stehen an Pin 12 ca. +5 V_s.

Die Zeilenendstufe

Im Stand-by-Betrieb ist der Ablenktransistor T 521 leitend. Periodisches zeilenfrequentes Ansteuern des Ablenktransistors entspricht dem Betriebszustand »EIN«. Die Energie für den Zeilenablenkkreis wird aus der EMK der Spule M-N gewonnen. Somit braucht T 521 keine zusätzliche Betriebsspannung.

Die Spannungsstabilisierung

In »stand-by« wird der Impuls der Wicklung E-D (feste Kopplung mit Wicklung A-B) als Referenz zur Stabilisierung herangezogen. Regelgröße an Pin 2 IC TDA 3640 ist +10,5 V.

Bei Vollbetrieb »EIN« muß die Spannung im Zeilenablenkkreis (Trafowicklung M-N) stabil gehalten werden. Dies geschieht über den Referenzimpuls der Wicklung C-D, die mit der Wicklung M-N fest gekoppelt ist. Die über D 633 gewonnene Gleichspannung ist proportional zur Bildbreite bzw. Hochspannung und wird über Pin 10 mit der an Pin 11 meßbaren Referenzspannung (ca. 3 V) verglichen. In diesem Regelzweig wird die + C/⋈-Spannung mit R 637 eingestellt.

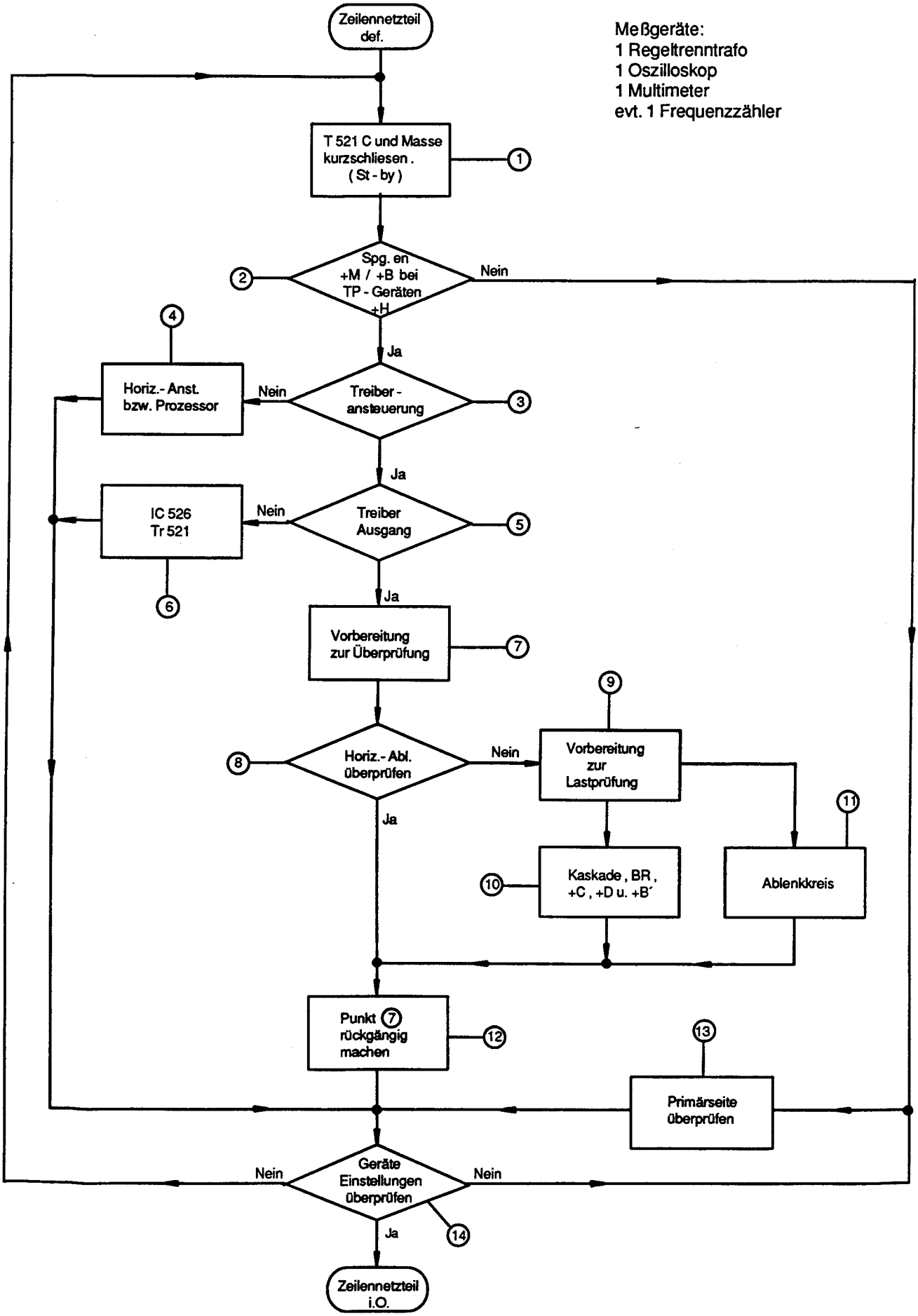
Schutzschaltungen des TDA 3640.

Es erfolgt sofortige Abschaltung bei:
- zu kleiner Betriebsspannung an Pin (≤7 V)
- zu großem I_{CE} des T 521 (negativer als −1 V an Pin 7)
- Netzüberspannung (Spannung an Pin 18 um 2,8 V größer als an Pin 2)
- Netzunterspannung (Spannung an Pin 18 um 1,4 V< als an Pin 2)
- zu großer Hochspannung (Zeilenrückschlagimpulse ≥6 V an Pin 12)
- überhöhter Kristalltemperatur (>135°C).

Schutzschaltungen des TDA 8140.

Es erfolgt sofortige Abschaltung bei:
- zu geringer Betriebsspannung an Pin 2 (< 7 V)
- Störimpulsen (falsche Steuerimpulse) während des Zeilenrücklaufes
- überhöhter Kristalltemperatur (> 160°).

Tips zur Fehlersuche

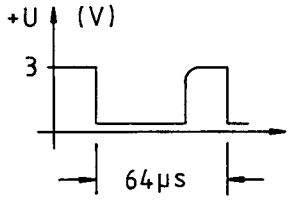


Erklärung zu den einzelnen Schritten im Flußdiagramm:

① Netzstecker ziehen
H - Ablenktransistor T 521 Kollektor mit Masse verbinden (Stand by)

② Gerät einschalten
Sekund. Spannung messen: +M 10-12,5 V ($I_{max.}$ 350 mA)
+B 9-11 V
+H 5 V (nur bei Fernbed.)

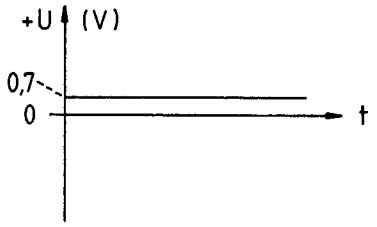
③ TDA 8140 Oszillogramm Pin 7 15625 Hz



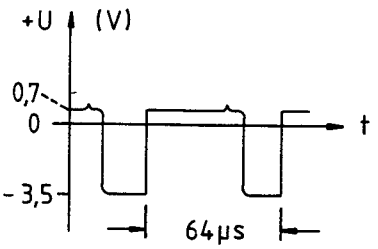
Spannung Pin 2 8-12 V
Spannung Pin 6 > 2,5 V = Normalbetrieb
Spannung Pin 6 0 V = Stand by (Fernbed.)

④ Ablenk-Baustein bzw. ZF/Synch.-Baustein:
Hor, Ausgang testen
Bedienteil - Prozessor: Stand by - Ausgang überprüfen.

⑤ Basis T 521 Oszillogramm:
bei IC 525 Pin 6: 0 V



bei IC 526 Pin 6: > 2,5 V



⑥ TDA 8140 mit Außenbeschaltung und T 521 überprüfen.

⑦ Vorbereitung zur Überprüfung der Horizontal-Endstufe
- Netzstecker ziehen, Si 624 entfernen
- Anschluß Ⓐ am Zeilennetztrafo TR 665 auftrennen
- TR 521 Kurzschluß entfernen
- an TR 665 Anschluß Ⓜ eine Gleichspannung von ca. 120 V (ca. 350 mA) einspeisen.
  Hierzu kann auch das eigene Netzteil verwendet werden: Elko C 626 Masse und Plus mit Sekundär-Masse und TR 665 Anschluß Ⓜ verbinden. Regeltrafo auf 100 V~ stellen. Gerät einschalten.

⑧ Kurzzeitig 15-20 V Gleichspannung über Diode an + M einspeisen. Gerät über Fernbed. einschalten (bei richtiger + C erscheint zu großes Bild
Wenn das eigene Netzteil verwendet wird, ist ein starker Netzbrumm sichtbar.
Achtung! Das Gerät jetzt nicht mehr mit Fernbed. auf Stand by schalten, sondern Betriebsspannung abschalten!

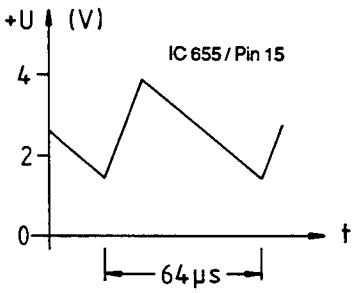
⑨ Vorbereitung zur Lastprüfung
Netzstecker ziehen, eventuell angelegte externe Hochvoltspannung (120 V) an TR 665/Anschluß Ⓜ abschalten.

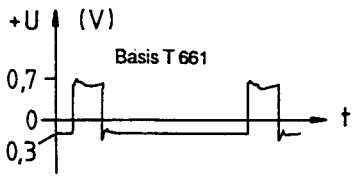
⑩ Kaskade U~ ablöten (Test: Kaskade und Bildröhre)
Last an Sekundär-Spannungsquellen prüfen:
Ohmmessung zwischen Masse und den Punkten +C, +D, +B, +B', +M, +H.
Der gemessene Widerstandswert muß bei richtiger Polung (Gleichrichterdiode in Sperrrichtung) größer als 4kΩ sein.

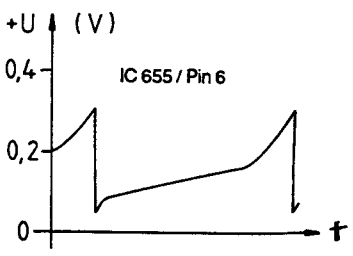
⑪ Tr 521 und Ablenkkreis (Horiz. Joch 1,5-3,5Ω) prüfen

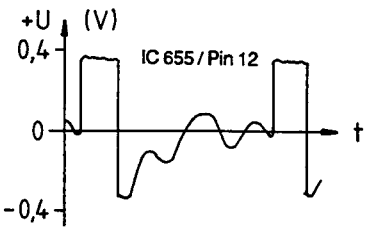
⑫ Alle Punkte unter rückgängig machen

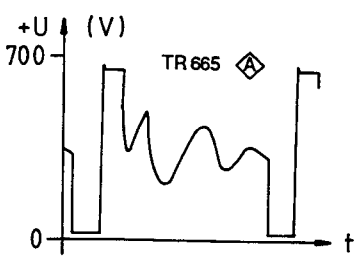
⑬ TR 665 Spannung Pkt. Ⓔ ca. 300 V
TDA 3640 Spannung Pin 18 ca. 13 V, Spannung Pin 17 ca. 6 V
Pin 2 ca. 10,5 V, Spannung Pin 16 ca. 3 V







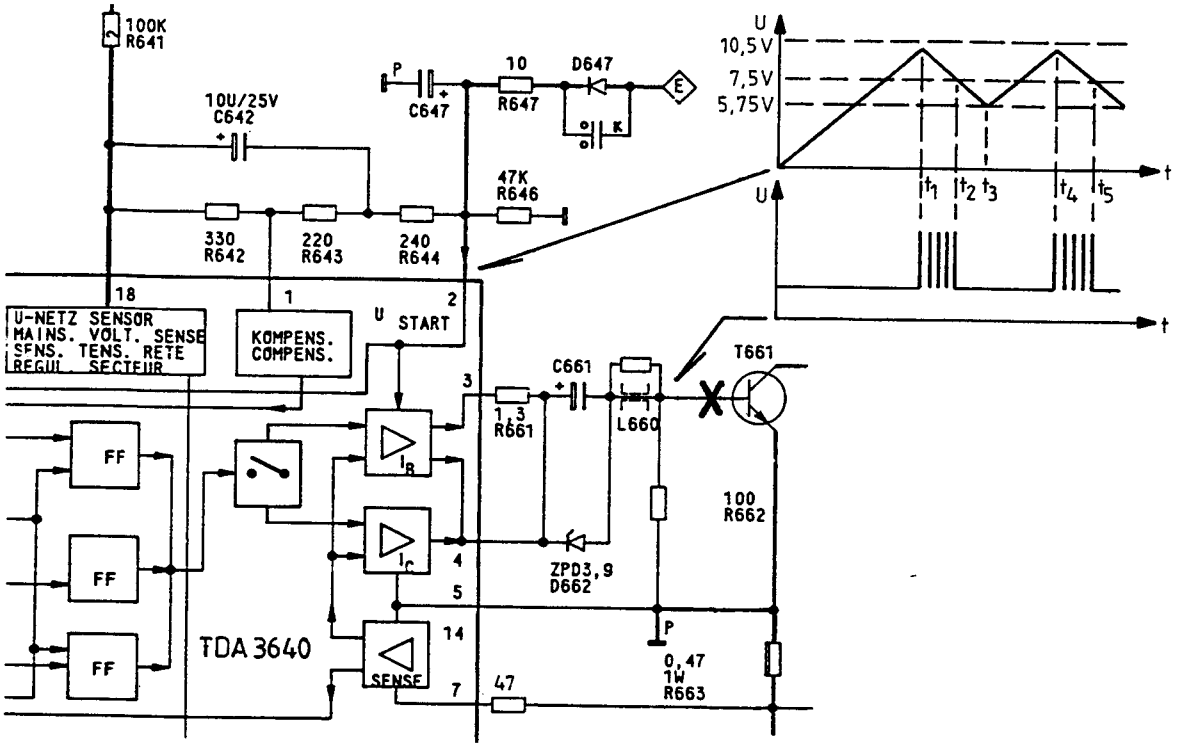




Mögliche Fehlerursachen: Si 624, T. 661, D 666, R 647, TDA 3640. Kurzschluß T 521 entfernen.

Einfacher Test für den Anschwing-Ablauf

Der Anschwing-Ablauf kann ohne Netzschalttransistor T 661 geprüft werden.
Hierzu den Basis-Anschluß T 661 von der übrigen Schaltung trennen:



Oszilloskop anschließen (Pin 2/C 661). Gerät einschalten.
An IC/Pin 2 steigt die Anlaufspannung bis knapp unter die Regelgröße 10 V an (Zeitpunkt t_1), Stromaufnahme ca. 100 µA.

Zeitpunkt t_1: IC 655 schwingt an (Stromaufnahme 15-20 mA) und gibt über Pin 3 etwa zeilenfrequente Steuerimpulse ab (ca. 1,5 V_{ss}). Der Spannungsteiler R 642, R 643 und R 644 ist für den IC-Betrieb (20 mA) zu hochohmig. Über D 647 wird keine Betriebsspannung gewonnen. An Pin 2 sinkt die Spannung wieder ab.

Zeitpunkt t_2: Bei U_B 7,0 V schaltet IC 655 die Basis-Ansteuerung ab. U_B sinkt weiter.

Zeitpunkt t_3: Bei U_B 5,75 V schaltet IC 655 ab, Stromaufnahme nur noch ca. 100µA. U_B steigt wieder an und im Zeitpunkt t_4 beginnt der Zyklus erneut.

Am IC/Pin 15 ist das ständige Anschwingen und Abschalten durch Impulspakete erkennbar.

⑭ +C Spannung nach Schaltbild kontrollieren, ggf. an R 637 nachstellen, Netzregelung mit Regeltrafo testen (±10%).

Service am I^2C-Bus

Bei Fehlfunktionen des Gerätes, die nicht auf Netzteil, Hochspannung und Ablenkung zurückzuführen sind, ist der I^2C-Bus gemäß Tabelle 1 zu püfen, bevor weitere Servicearbeiten nach Tabelle 2 durchgeführt werden.

Der µComputer in der Bedieneinheit IC 811 liefert Steuerbefehle für Tuner, Videotext und T 111 (zur EURO-AV-BUCHSE) über den I^2C Bus.

Hinweis:

Bei Modulwechsel ist das Gerät generell auszuschalten!

Auch in Stellung »Bereitschaft« darf kein Modul gezogen werden! MOS-handling beachten.

Tablle 1

Messung	Meßwert	Meßpunkt	Mögliche Fehler
+H	5V	Pin 40, IC 811	D 691, IC 686, IC 811
4 MHz Takt Reset	4 MHz, $3V_{ss}$ $4V_{ss}$ nur im Einschaltmoment	Pin 22, IC 811 Pin 23	F 808, IC 811 C 806, IC 811
I^2C Bus	$5V_{ss}$	Pin 10, 37, IC 811	Die I^2C-Bus-Daten sind auch ohne Fernbedienung oder Keyboardeingabe vorhanden. Bei fehlenden Daten: Die Leitungen SDA und SLC auftrennen. Sind dann die I^2C-Bus-Daten vorhanden, liegt eine Überlastung des I^2C-Bus vor. **Fehlerursache:** Tuner, Videotext, T 111

Tabelle 2

Mögliche Fehlerarten des Gesamtgerätes

Fehler	Mögliche Ursache	Meßwert	Meßpunkt
Keine Frequenzabstimmung	Tuner (Speicher, PLL)	+0,2 – 30V	Pin 13, 15
	+B' +H ◇M	+12V + 5V ca+4,5V	Tuner Pin 16 Tuner Pin 2 Tuner Pin 1
Keine Bedienfunktion	+H, IC 811	+ 5V	IC 811 Pin 40
LED falsche Anzeige	IC 811		
	F 808	4 MHz, 3V	IC 811 Pin 22
Nur Raster	ZF/SYNC.	SSC (29), (30)	ZF/SYNC. Pin 23
	Farb/RGB	SSC (29), (30)	Farb/RGB Pin 6
Kein FBAS-Signal	Tuner	ca. 10V	Tuner Pin 3
	ZF/SYNC.	ca. 10V	ZF/SYNC. Pin 12
	+B'	+12V	ZF/SYNC. Pin 24
	+B	+12V	ZF/SYNC. Pin 25
Kein Ton	ZF/SYNC.	Analogspannung ca. 0,5V-5V	ZF/SYNC. Pin 17
	Keine Koinzidenzkennung (ZF/SYNC.)	> 4V	IC 811 Pin 19
	IC 365	+M/ca. 18V	IC 365 Pin 2
Keine Programmumschaltung mit Fernbedienung	IR-Vorverstärker	IR-Signal $5V_{ss}$	IC 811 Pin 3
Keine Analogwerte für Helligkeit Kontrast Farbkontrast	 IC 811, C 843 IC 811, C 833 IC 811, C 823	 1-3 V 2-4 V 2-4 V	 Farb/RGB Pin 10 Farb/RGB Pin 11 Farb/RGB Pin 12
Beim Einschalten mit der Netztaste schaltet das Gerät auf Bereitschaft	T 801	beim Einschalten kurzzeitig »LOW«	IC 811 Pin 31

Short Functional Description

The line/power supply unit has two important features:
- the line/mains transformer (ZNT) with ferrite core. This transformer is provided with windings for the power supply and line output stages;
- the supply frequency corresponds to the line frequency.

The ZNT is used for electrical isolation, horizontal deflection, and generation of the operating voltage. The ZNT windings are tightly and loosely coupled to ensure that the load capacity of the supplies is high enough and that back effects on the line transformer winding N-M are avoided.

Startup Circuit

The starting voltage for IC 655 is obtained from the bridge rectifier D 621 via R 641. If the voltage on pin 2, which is derived from the resistor network R 642, 643, and 644, reaches a level of approximately 10 V, the IC 655 starts to drive T 661 via pin 3 (precondition: pin 18 >10V). The line/power supply circuit starts to oscillate. Simultaneously, the current consumption drawn via pin 2 rises and the winding E-D of the ZNT takes over the operating voltage supply function (D 647, R 647, C 647).

Oscillator in IC TDA 3640

The control pulses for the T 661 are generated by are generated by an oscillator which operates on the threshold principle where C 653 is an externally connected frequency-determining component (oscillator retaining range 14-17 kHz approx.). The oscillator oscillates at a free-running frequency until the reference pulses from the ZNT exceed 1 V_p at pin 12. In full operating condition (ON) a voltage of about +5 V_p is applied to pin 12.

Line Output Stage

The deflection transistor T 521 is activated in stand-by mode. The cyclic line-frequency control of the deflection transistor corresponds to the "ON" operating mode. The power for the horizontal sweep circuit is derived from the elcetromotive force of coil M-N sao that no additional operating voltage is necessary for T 521.

Vooltage Stabilisation

In stand-by mode the pulse from winding E-D (tightly coupled with winding A-B) is used as a reference for stabilisation. The controlled variable is +10.5 V on pin 2 TDA 3640.
In full operating condition, that is "ON", the voltage in the horizontal sweep circuit (transformer winding M-N) must be stabilised to a constant level. This is achieved by means of a reference pulse from winding C-D which is tightly coupled with winding M-N. The resulting direct voltage obtained via D 633 is proportional to the width of the picture or high voltage and is applied to pin 10 and compared with the reference voltage (about 3 V) on pin 11. In this part of the circuit the + C/◇M◇ voltage is adjusted by means of R 637.

Protective Circuits of TDA 3640

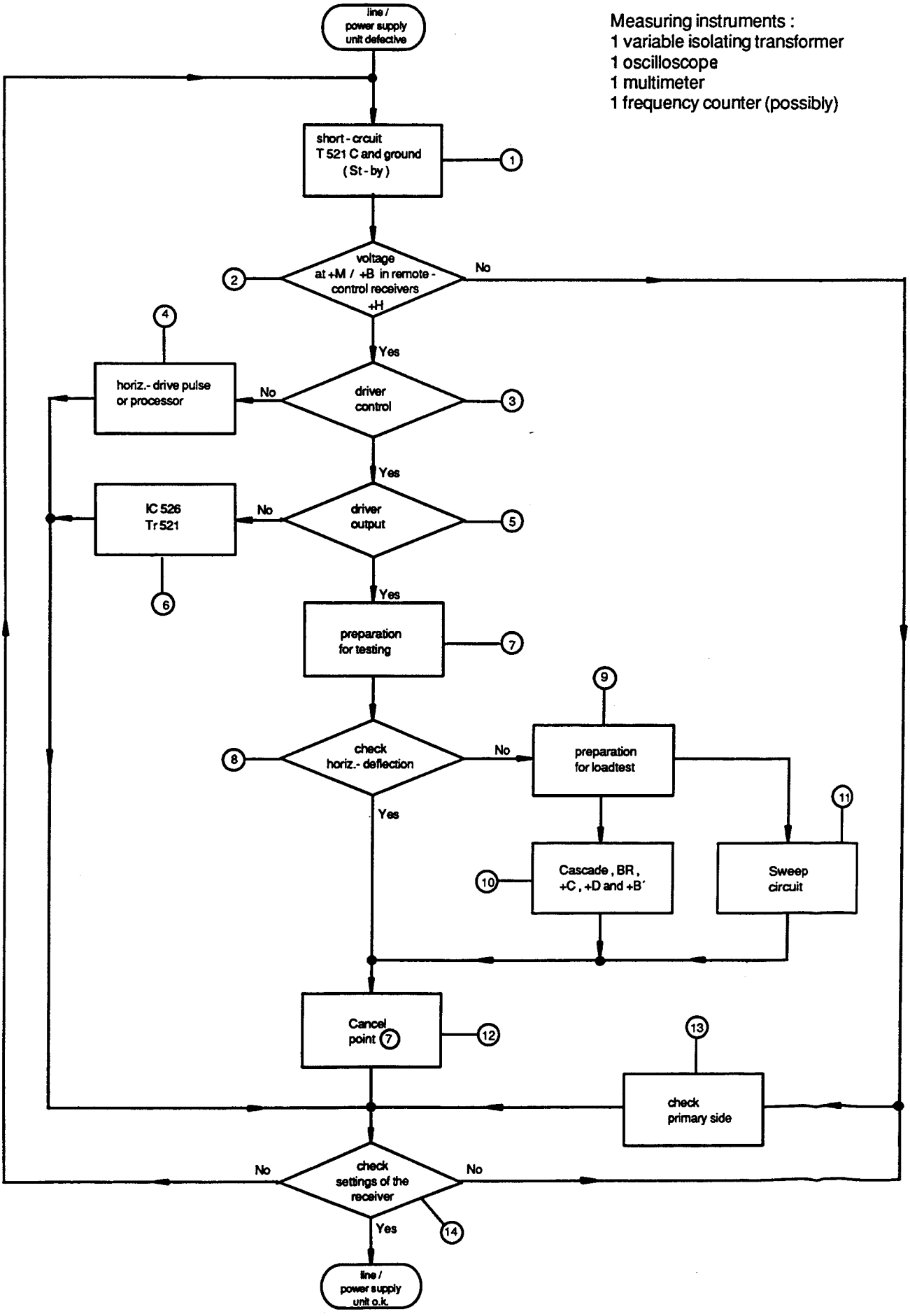
The protective circuits respond immediately if:
- the operating voltage on pin 2 is too low (≤7 V);
- I_{CE} of T 521 is too high (more negative than −1 V at pin 7);
- the power supply voltage is too high (voltage at pin 18 is 2.8 V higher than at pin 2);
- the power supply voltage is too low (voltage at pin 18 is 1.4 V lower than at pin 2);
- the high voltage is excessivley high (line flyback pulses ≥6 V at pin 12);
- the crystal temperature is too high (>135° C).

Protective Circuits of TDA 8140

The protective circuits respond immediately if:
- the operating voltage at pin 2 is too low (<7 V);
- interference pulses (incorrect control pulses) occur during line flyback;
- the crystal temperature is too high (>160° C).

Tips for Falut location

Measuring instruments :
1 variable isolating transformer
1 oscilloscope
1 multimeter
1 frequency counter (possibly)

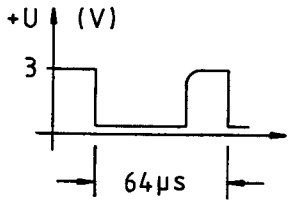


Explanation of the individual steps in the flow chart:

① Disconnect the mains plug
Connect the horizontal sweep transistor T 521 collector to ground (stand-by)

② Switch on the receiver.
Check the secondary voltages: +M 10-12.5 V (I_{max} 350 mA)
+B 9-11 V
+H 5 V (only RC receivers)

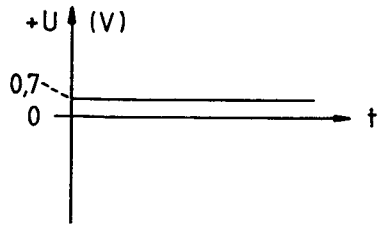
③ TDA 8140 oscillogram pin 7 15625 Hz



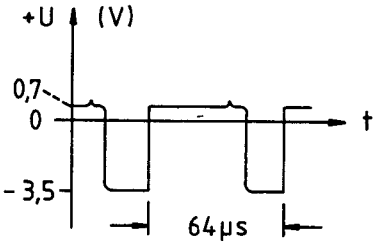
voltage pin 2 8-12 V
voltage pin 6 > 2.5 V = normal operation
voltage pin 6 0 V = stand-by (RC)

④ Deflection module and IF/sync module: check line output Control unit - processor: check stand-by - output

⑤ Oscillogram of base T 521
IC 526 pin 6: 0 V



IC 526 pin 6: >2.5 V



⑥ Check TDA 8140 with externally connected components and T 521

⑦ Preparations for checking the line output stage
- Disconnect the mains plug; remove Si 624
- Open connection Ⓐ of the line/mains transformer TR 665
- Remove the short circuit from T 521
- Apply a voltage of approx. 120 V (about 350 mA) to connection Ⓜ of TR 665.
  It is also possible to use the receiver's own power supply. For this purpose, connect the ground connection of the C 626 electrolytic capacitor and the positive pole to the secondary ground connection and Ⓜ of TR 665. Set the variable-voltage transformer to 100 V a.c.. Switch on the receiver.

⑧ Apply a 15-20 V direct voltage for a short time to +M via an external diode. Switch on the receiver by means of the remote control (the picture is too large if +C is correct).
When using the built-in power supply an intensive mains hum will be visible.
Attention! Do not use the remote control to switch the receiver to stand-By but switch off the operating voltage!

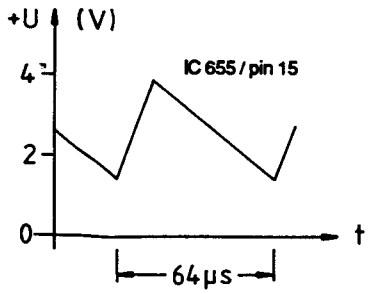
⑨ Preparations for load test
Disconnect the mains plug and switch off the external high voltage (120 V) possibly connected to TR 665/contact Ⓜ.

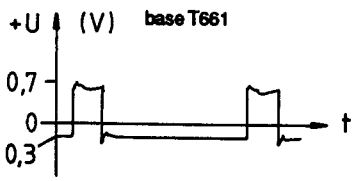
⑩ Unsolder cascade U a.c. (cascade and picture tube test)
Check the load at the secondary voltage sources:
Ohmic resistance between ground and points +C, +D, +B, +B', +M, +H. If the polarity is correct (rectifier diode in high-resistance direction) the measured resistance must be higher than 4 kOhm.

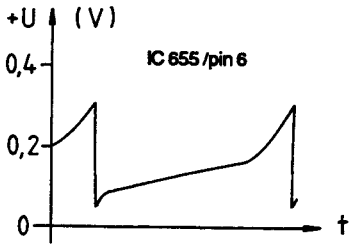
⑪ Check T 521 and sweep circuit (horizontal deflection yoke 1.5-3.5 Ohm)

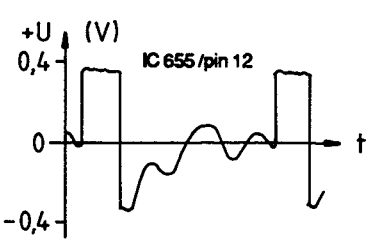
⑫ Cancel all preparatory measures under ⑦.

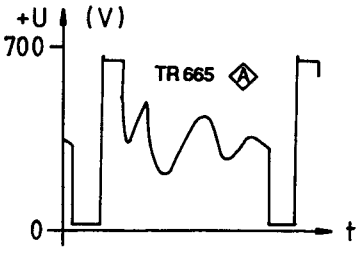
⑬ TR 665 voltage point Ⓑ 300 V approx.
TDA 3640 voltage pin 18 13 V approx., voltage pin 17 6 V approx.
voltage pin 2 10.5 V approx., voltage pin 16 3 V approx.







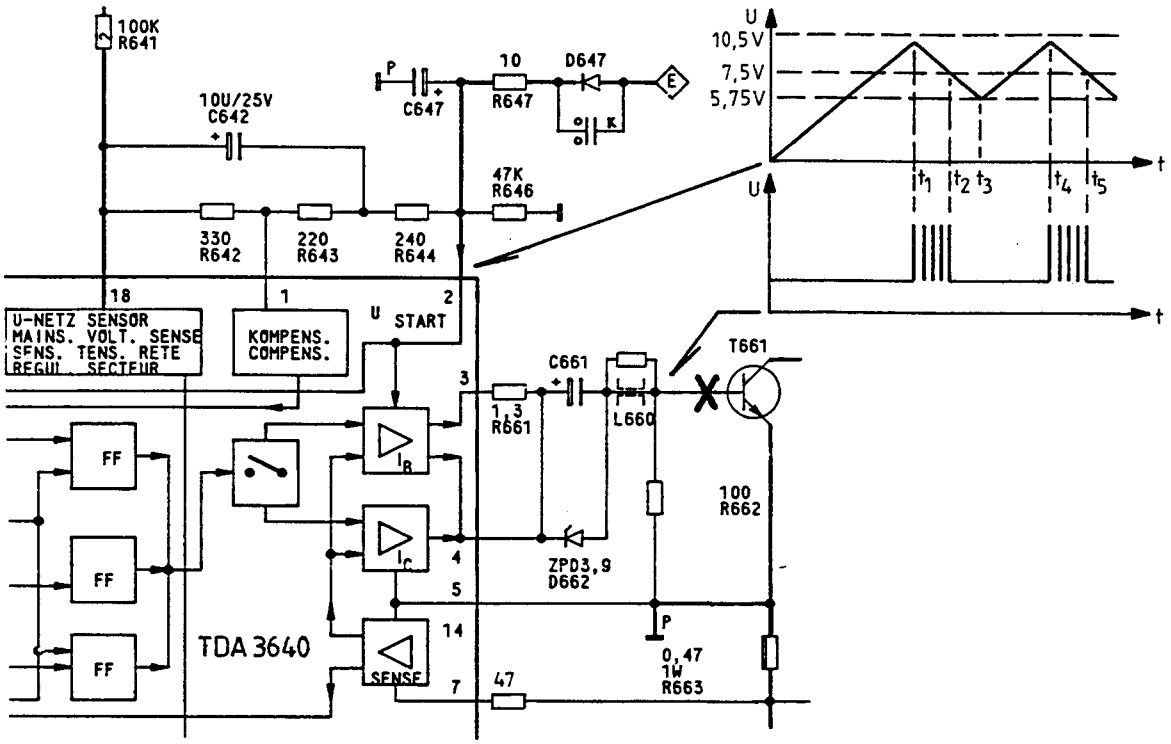




Possible causes of trouble: Si 624, T 661, D 666, R 647, TDA 3640.
Remove short circuit at T 521.

Simplified Test for the Startup Sequence

The startup sequence can be checked without the mains switching transistor T 661.
For this purpose, disconnect the base of T 661 from the circuit:



Connect an oscilloscope to pin 2/C 661. Switch on the receiver. On pin 2 of the IC the starting voltage must rise to just below the controlled variable of 10 V (time t_1); current consumption approx. 100µA.

Time t_1: IC 655 starts to oscillate (current consumption 15-20 mA) and supplies via pin 3 conrol pulses at approx. line frequency (1.5 V_{pp}). The voltage divider R 642, R 643, and R 644, is at too high a resistance to provide sufficient current for the IC to be in operation (20 mA required). There is no operating voltage obtained via D 647. The voltage at pin 2 decreases.

Time t_2: When the voltage U_B reaches 7.0 V the IC 655 stops driving the base. U_B continues to decrease.

Time t_3: When the voltage U_B reaches 5.75 V the IC 655 switches off; the current consumption is now only 100µA approximately. U_B rises and the cycle starts again at t_4.

On pin 15 of the IC the cyclic oscullation and switching off process can be identified by the packets of pulses.

⑭ Check the voltage +C according to the circuit diagram and readjust it with R 637, if necessary; check the power supply voltage regulation with the variable-voltage transformer (±10%).

Service checks on the I^2C bus

If faults occur in the set which cannot be attributed to the power supply unit, the EHT or the deflection system, the I^2C bus should be checked using Table 1 before further service work is carried out using Table 2.

Via the I^2C bus the microcomputer in the control unit IC811 supplies control signals for the tuner, videotext (teletext) and T111 (to the EURO-AV-socket).

Note:

When a module is being changed, the set should be switched off completely. Modules must not be unplugged even in the "standby" mode! Observe MOS handling precautions.

Table 1

Test	Test Figures	Test Point	Possible faults
+H	5V	Pin 40, IC811	D691, IC686, IC811
4MHz clock Reset	4MHz, 3V_{pp} 4V_{pp} only at moment of switch on	Pin 22, IC811 Pin 23	F808, IC811 C806, IC811
I^2C bus	5V_{pp}	Pin 10, 37, IC811	The I^2C bus data are present even without input from the remote control or keyboard. If data are absent disconnect the SDA and SLC lines. If data are then present on the I^2C bus, the I^2C bus is overloaded. Possible faults: Tuner, teletext, T111

Table 2

Possible faults which can occur in any part of the set.

Fault	Possible Cause	Test Figure	Test Point
No frequency tuning	Tuner (memory, PLL)	+0.2 – 30V	Pin 13, 15
	+B' +H ◇M◇	+12V + 5V +4.5V approx.	Tuner, pin 16 Tuner, pin 2 Tuner, pin 1
No functions accepted	+H, IC811	+ 5V	IC811, pin 40
Incorrect LED indication	IC811		
	F808	4MHz, 3V	IC811, pin 22
Raster only	IF/sync	SSC (29), (30)	IF/sync, pin 23
	Colour/RGB	SSC (29), (30)	Colour/RGB, pin 6
No CCVS	Tuner	10V approx.	Tuner, pin 3
	IF/sync.	10V approx.	IF/sync, pin 12
	+B'	+12V	IF/sync, pin 24
	+B	+12V	IF/sync, pin 25
No sound	IF/sync	Analog voltage 0.5-5V approx.	IF/sync, pin 17
	No coincidence identification (IF/sync)	> 4V	IC811, pin 19
	IC 365	+M/about 18V	IC365, pin 2
Programme cannot be change with remote control	IR-preamplifier	IR-signal 5V_{pp}	IC811, pin 3
No analog signals for Brightness Contrast Colour contrast	 IC 811, C 843 IC 811, C 833 IC 811, C 823	 1-3 V 2-4 V 2-4 V	 Colour/RGB, pin 10 Colour/RGB, pin 11 Colour/RGB, pin 12
Set switches to standby mode on operation of power button	T 801	Short-time "LOW" on switch-on	IC811, pin 31

Prospetto delle funzioni

L'alimentatore con stadio finale orizzontale ha due caratteristiche importanti:
- il trasformatore di riga (ZNT) con nucleo in ferrite. Questo trasformatore è provvisto di avvolgimenti per alimentatore e stadio finale di riga
- la frequenza dell'alimentatore corrisponde alla frequenza di riga.

Il trasformatore serve per la separazione galvanica, la deflessione di riga e la produzione della tensione d'alimentazione. Mediante accoppiamento stretto e lasco degli avvolgimenti del trasformatore si ottiene che le tensioni d'alimentazione sono sufficentemente caricabili e non risultano effetti reattivi sull'avvolgimento N-M della sezione di riga del trasformatore.

Il circuito di spunto

La tensione di spunto giunge all'integrato IC 655 dal raddrizzatore a ponte D 621 attraverso R 641. Appena con le resistenze R 642, 643 e 644 si ottengono ca. 10 V al pin 2, l'integrato IC 655 comanda T 661 mediante pin 3 (condizione: al pin 18 deve esserci una tensione >10 V). L'alimentatore di riga entra in regime. Contemporaneamente aumenta l'assorbimento di corrente attraverso il pin 2 e l'avvolgimento E/D del trasformatore provvede ad ottenere l'ulteriore tensione di regime (D 647, R 647, C 647).

L'oscillatore in IC TDA 3640

Gli impulsi di comando per T 661 sono generati da un oscillatore che lavora secondo il principio di soglia. C 653 è per questo l'unico elemento che determina la frequenza, collegato esternamente (campo di sincronismo dell'oscillatore compreso tra ca. 14-17 kHz). L'oscillatore rimane in regime libero finchè gli impulsi di riferimento del trasformatore al pin 12 sono maggiori di +1 V_p. Con apparecchio in regime al pin 12 si trovano ca. +5 V_p.

Lo stadio finale di riga

In funzionamento stand-by il transistor di deflessione T 521 è conduttivo. Il comando periodico a ritmo di riga del transistor di deflessione corrisponde alla condizione di regime «EIN» (acceso). L'energia per il circuito di deflessione viene ricavata dalla FEM della bobina M-N. In tal modo T 521 non necessita di nessun altra tensione d'alimentazione.

La stabilizzazione della tensione

In stand-by l'impulso dell'avvolgimento E-D (accoppiamento stretto con l'avvolgimento A-B) viene utilizzato come riferimento per la stabilizzazione. Al pin 2 di IC TDA 3640 la grandezza di regolazione è +10,5 V.
Con apparecchio acceso la tensione nel circuito di deflessione orizzontale (avvolgimento M-N del trasformatore) deve rimanere stabile. Ciò avviene mediante l'impulso di riferimento dell'avvolgimento C-D che è accoppiato strettamente con l'avvolgimento M-N. La tensione continua ottenuta con D 633 è proporzionale alla larghezza di quadro risp. te all'EAT e sul pin 10 viene confrontata con la tensione di riferimento presente al pin 11 (ca. 3 V). In questa situazione la tensione + C/⋄M⋄ viene regolata con R 637.

Circuiti di protezione del TDA 3640

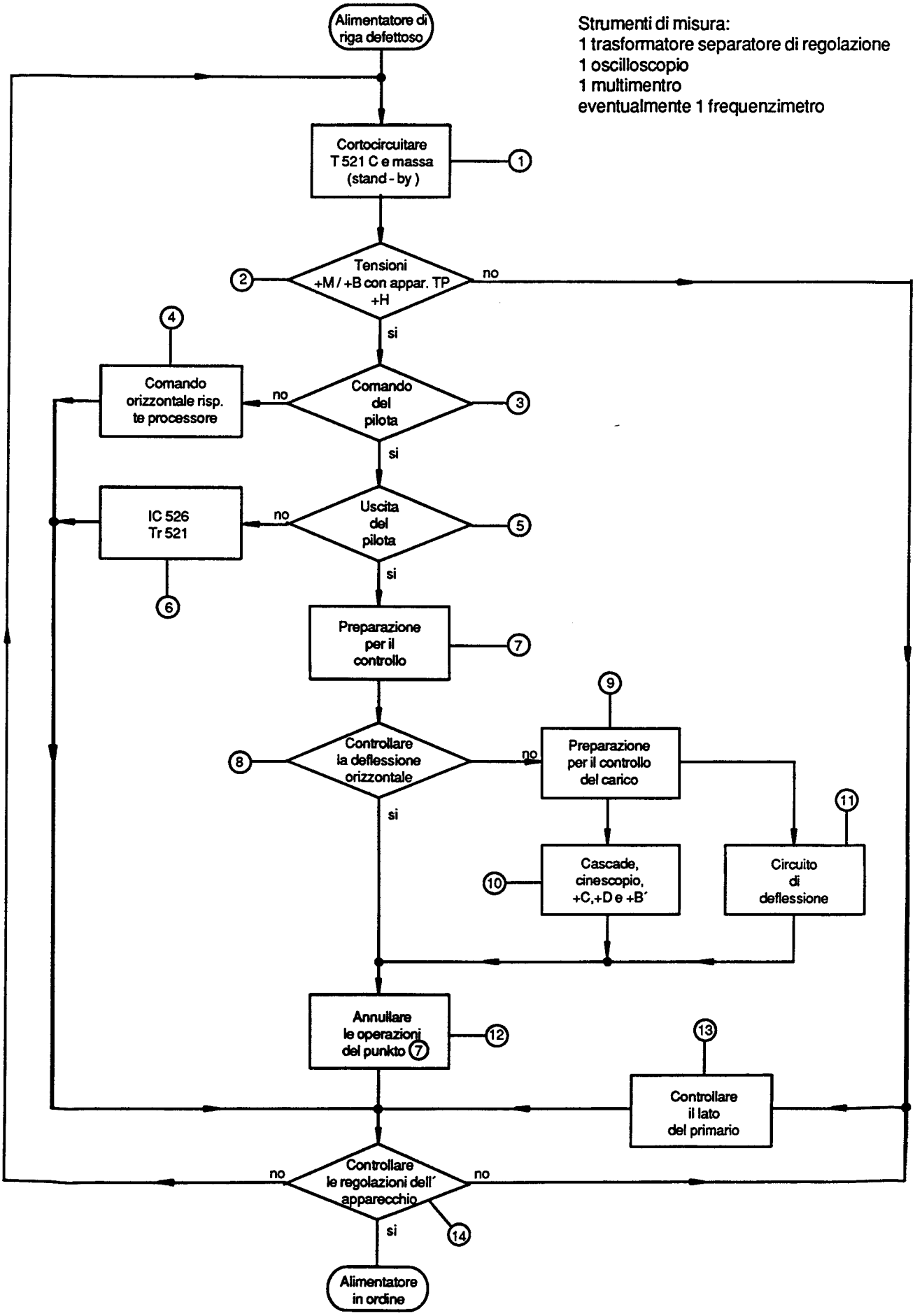
Essi provocano un immediato spegnimento:
- quando al pin 2 la tensione di regime è troppo bassa (≤7 V)
- quando esiste eccessiva I_{CE} in T 521 (più negativa di −1 V al pin 7)
- in presenza di sovratensioni di rete (tensione al pin 18 superiore di 2,8 V rispetto al pin 2)
- in presenza di sottotensioni di rete (tensione al pin 18 inferiore di 1,4 V rispetto al pin 2)
- quando la EAT è eccessiva (impulsi di ritorno di riga ≥6 V al pin 12)
- con eccessiva temperatura del cristallo (>135° C).

Circuit di protezione del TDA 8140

Essi provocano un immediato spegnimento:
- quando al pin 2 la tensione di regime è troppo bassa (<7 V)
- in presenza di impulsi di disturbo (impulsi di comando errati) durante il ritorno di riga
- con eccessiva temperatura del cristallo (>160°C).

Suggerinenti per la ricerca guasti

Strumenti di misura:
1 trasformatore separatore di regolazione
1 oscilloscopio
1 multimentro
eventualmente 1 frequenzimetro

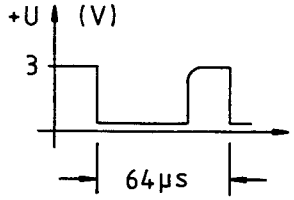


Spiegazione dei singoli passaggi del diagramma di ricerca:

① Disinserire la spina di rete.
Collegare a massa il collettore del transistor di deflessione orizzontale T 521 (stand-by).

② Accendere l'apparecchio
Misurare la tensione secondaria: +M 10-12,5 V (I_{max} 350 mA)
+B 9-11 V
+H 5 V (solo app. con TP)

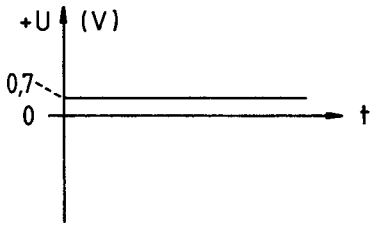
③ TDA 8140 Oscillogramma Pin 7 15625 Hz



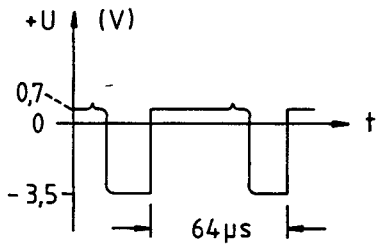
Tensione Pin 2 8-12 V
Tensione Pin 6> 2,5 V = funz. normale
Tensione Pin 6 0 V = stand-by (TP)

④ Modulo di deflessione risp.te modulo FI/sincronismo: controllare l'uscita orizzontale.
Modulo di comando - processore: controllare l'uscita stand-by.

⑤ Oscillogramma alla base T 521:
con 0 V al pin 6 di IC 526



con tensione >2,5 V al pin 6 di IC 526



⑥ Controllare TDA 8140 con cablaggio periferico e T 521.

⑦ Preparazione per il controllo dello stadio finale orizzontale
- Disinserire la spina di rete, togliere Si 624.
- Staccare il collegamento Ⓐ sul trasformatore TR 665.
- Allontanare il cortocircuito a TR 521.
- Applicare al collegamento Ⓜ di TR 655 una tensione continua di ca. 120 V (ca. 350 mA).
  Per questo può impiegato anche l'alimentatore proprio: collegare la massa di C 626 alla massa secondaria e il + al collegamento Ⓜ del trasformatore TR 665. Portare il regolatore separatore su 100 V~. Accendere l'apparecchio.

⑧ Applicare brevemente 15-20 V continui mediante il diodo a +M. Accendere l'apparecchio con TP (con +C corretta, appare un'immagine troppo grande).
Quando viene impiegato l'alimentatore proprio, è visibile un forte ronzio di rete.
Attenzione! Ora non commutare l'apparecchio su stand-by con telecomando, bensì togliere la tensione d'alimentazione!

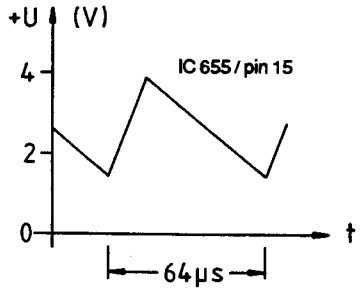
⑨ Preparazione per il controllo del carico
Disinserire la spina di rete, togliere la tensione di alimentazione esterna (120 V) eventualmente collegata a TR 665/collegamento Ⓜ.

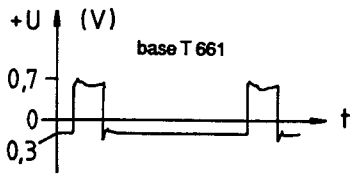
⑩ Dissaldare il cascade U~ (controllo del cascade e del cinescopio).
Controllare il carico alle sorgenti di tensione secondarie:
Misura ohmica tra massa e i punti +C, +D, +B, +B', +M, +H. Il valore ohmico misurato, con esatta polarità (diodo raddrizzatore con polarizzazione inversa) deve essere superiore a 4 kOhm.

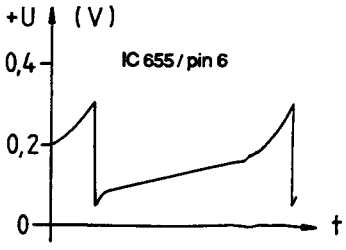
⑪ Controllare Tr 521 e il circuito di deflessione (giogo orizzontale 1,5-3,5 Ohm).

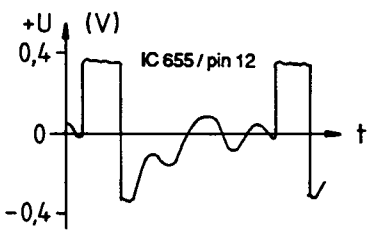
⑫ Annullare tutte le operazioni descritte al punto 7.

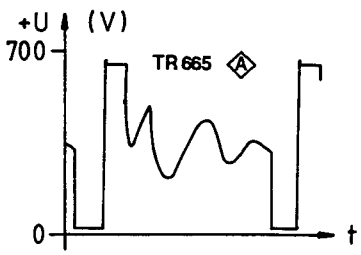
⑬ TR 665 tensione punto Ⓑ ca. 300 V
TDA 3640 tensione pin 18 ca. 13 V, tensione pin 17 ca. 6 V
tensione pin 2 ca. 10,5 V, tesnione pin 16 ca. 3 V





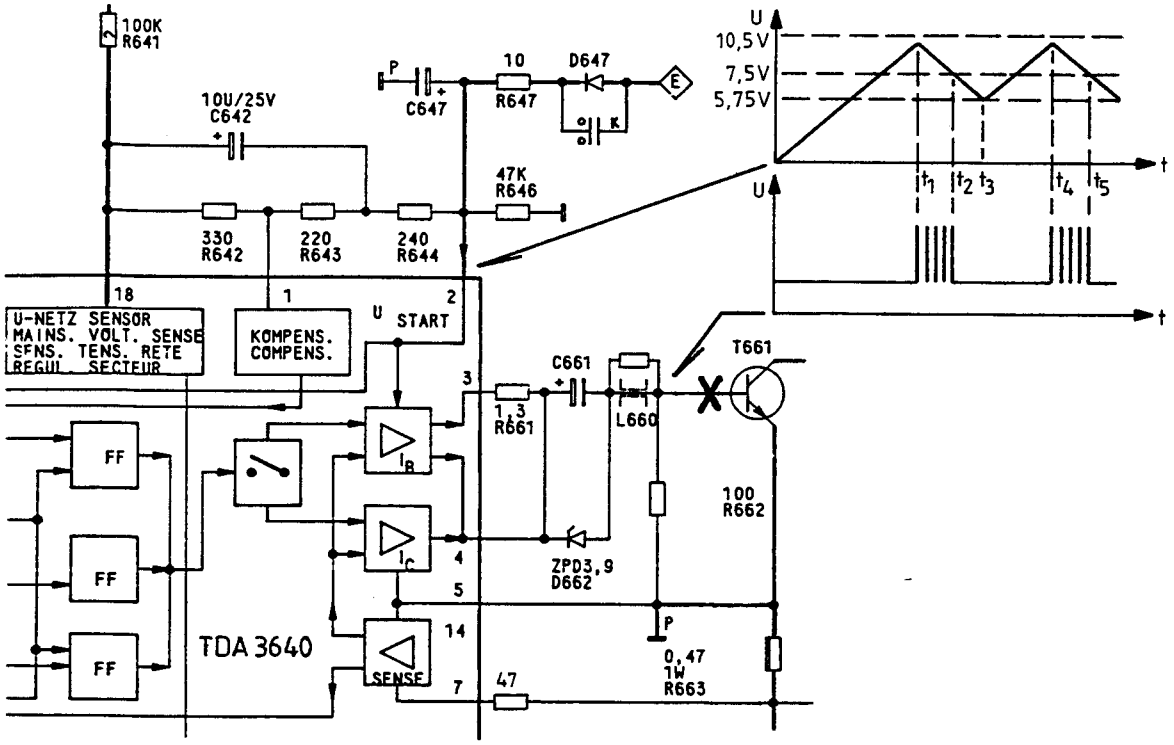






Possibili cause del guasto: Si 624, Tr 661, Di 666, R 647, TDA 3640.
Togliere il cortocircuito a Tr 521.

Semplice verifica dell'avviamento processo oscillatorio):
Questo può venir controllato senza il transistor T 661.
Interrompere quindi il collegamento della base di T 661 dal resto del circuito:



Collegare l'oscilloscopio (pin 2/C 661). Accendere l'apparecchio. Al pin 2 dell'integrato la tensione di spunto cresce appena al di sotto della grandezza di regolazione di 10 V (istante t_1), assorbimento di corrente ca. 100 µA.

Istante t_1: IC 655 oscilla (assorbimento 15-20 mA) e attraverso pin 3 invia impulsi di comando circa alla frequenza di riga (ca. 1,5 V_{pp}). Il partitore di tensione R 642, R 6432 e R 644 ha un valore ohmico troppo elevato per il funzionamento dell'integrato (20 mA). Mediante D 647 non viene ricavata nessuna tensione di alimentazione. Al pin 2 la tensione diminuisce nuovamente.

Istante t_2: Con U_B 7,0 V, IC 655 disattiva il circuito di comando della basse. U_B scende ulteriormente.

Istante t_3: Con U_B 5,75 V, IC 655 è disattivato, l'assorbimento è ancora ca. 100 µA. U_B sale nuovamente e all'istante t_4 il ciclo si ripete.

Al pin 15 dell'integrato è riconoscibile il continuo attivarsi e disattivarsi mediante pacchetti di impulsi.

⑭ Controllare la tensione +C secondo lo schema, eventualmente correggerla con R 637, controllare la regolazione della tensione di rete con il regolatore separatore (±10%).

Servizio per I^2C-Bus

Se l'apparecchio funziona erroneamente e ciò non dipende nè dall'alimentatore, nè dall'alta tensione o dalla deflessione, occorre controllare il bus I^2C secondo la tabella 1 prima di effettuare altri lavori di assistenza come da tabella 2.

Il microcomputer nell'unità di comando IC 811 fornisce le istruzioni per tuner, televideo e T 111 (alla presa EURO/SCART) attraverso il bus I^2C.

Nota:

Spegnere l'apparecchio durante la sostituzione di un modulo! Non togliere il modulo memmeno con apparecchio in posizione d'attesa! Fare attenzione alle norme MOS.

Tabella 1

Misura	Valore di misura	Punto di misura	Possibili guasti
+H	5V	Pin 40, IC 811	D 691, IC 686, IC 811
Cadenza 4 MHz Reset	4 MHz, $3V_{pp}$ $4V_{pp}$ solo all'atto dell'accensione	Pin 22, IC 811 Pin 23	F 808, IC 811 C 806, IC 811
Bus I^2C	$5V_{pp}$	Pin 10, 37, IC 811	I dati nel bus I^2C sono presenti anche senza comando da telecomando o immissione tramite tastiera. Se i dati mancano: interrompere le linee SDA e SLC. Se ora i dati sono presenti, nel bus I^2C c'è un sovraccarico. **Possibili cause del guasto:** tuner, televideo, T 111

Tabella 2

Possibili guasti nell'apparecchio

Guasto	Possibile causa	Valore di misura	Punto di misura
Non è possibile sintonizzare la frequenza	Tuner (memoria, PLL)	+0,2 – 30V	Pin 13, 15
	+ B' + H (M)	+ 12V + 5V ca + 4,5V	Tuner Pin 16 Tuner Pin 2 Tuner Pin 1
Nessuna funzione viene accettata	+ H, IC 811	+ 5V	IC 811 Pin 40
Indicazione LED errata	IC 811		
	F 808	4 MHz, 3V	IC 811 Pin 22
Solo raster	FI/sinc.	SSC (29), (30)	FI/sinc. Pin 23
	Colore/RGB	SSC (29), (30)	Colore/RGB Pin 6
Manca il segnale FBAS	Tuner	ca. 10V	Tuner Pin 3
	FI/sinc.	ca. 10V	FI/sinc. Pin 12
	+ B'	+ 12V	FI/sinc. Pin 24
	+ B	+ 12V	FI/sinc. Pin 25
Manca l'audio	FI/sinc.	Tensione analogica ca. 0,5V-5V	FI/sinc. Pin 17
	Nessun riconoscimento di coincidenza (FI/sinc.)	4V	IC 811 Pin 19
	IC 365	+ M/ca. 18V	IC 365 Pin 2
Non viene commutato il programma con telecomando	Preamplif. IR	Segnale IR $5V_{pp}$	IC 811 Pin 3
Manca il valore analogico per luminosità contrasto contrasto colore	 IC 811, C 843 IC 811, C 833 IC 811, C 823	 1-3 V 2-4 V 2-4 V	 Colore/RGB Pin 10 Colore/RGB Pin 11 Colore/RGB Pin 12
Accendendo con tasto rete l'apparecchio commuta in posizione d'attesa	T 801	All'atto dell'accensione brevemente «LOW»	IC 811 Pin 31

BLAUPUNKT
BOSCH Gruppe

Chassis FM 100-22

Farbfernseher
Colour TV
Televisore a colori

PM 37-47	**7 667 000**
PM 40-48	**7 667 020**
PM 42-48	**7 667 040**
PM 45-48	**7 667 060**

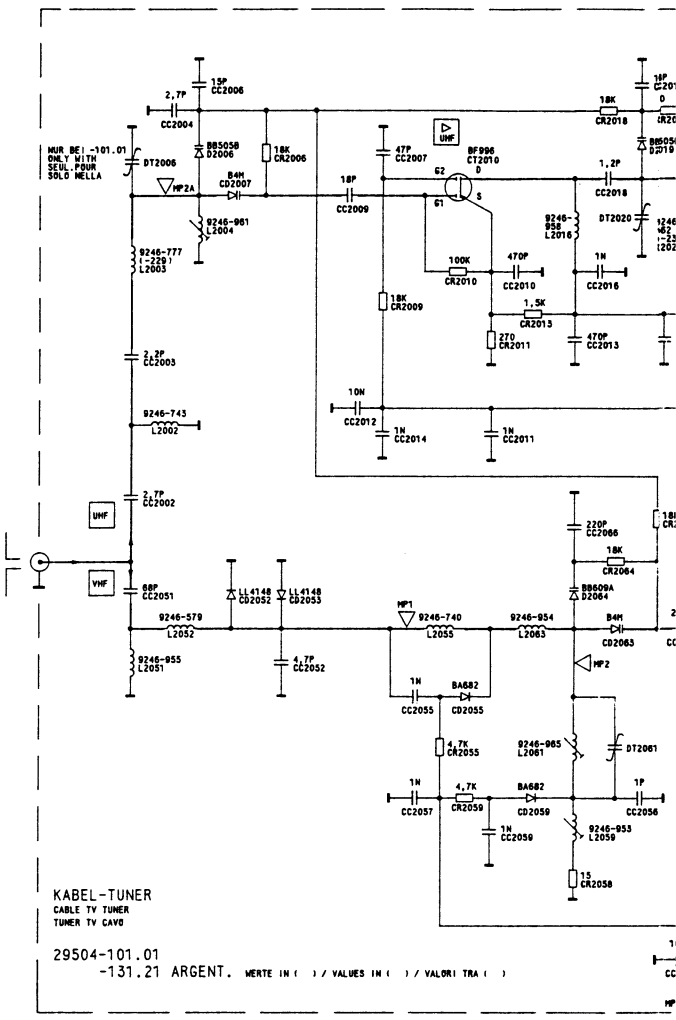
Schaltbild · Schematic
Schema

Gedruckt in der Bundesrepublik Deutschland
bei Gebrüder Gerstenberg

Änderungen vorbehalten
Modifications reserved
Con riserva di modifiche

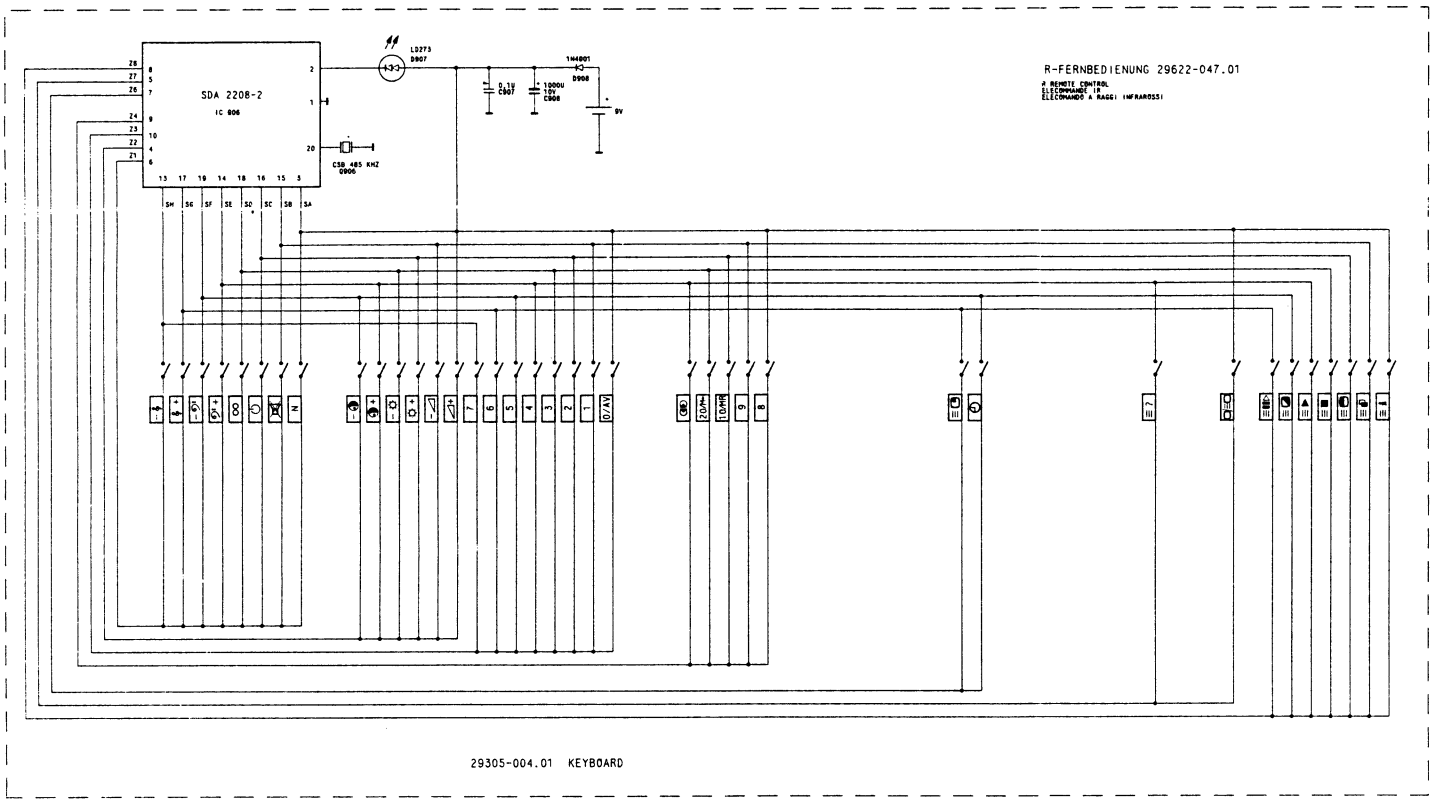
6 D87 207 008
Ausgabe 752

Kabel-Tuner
Cable TV Tuner
Tuner tv cavo

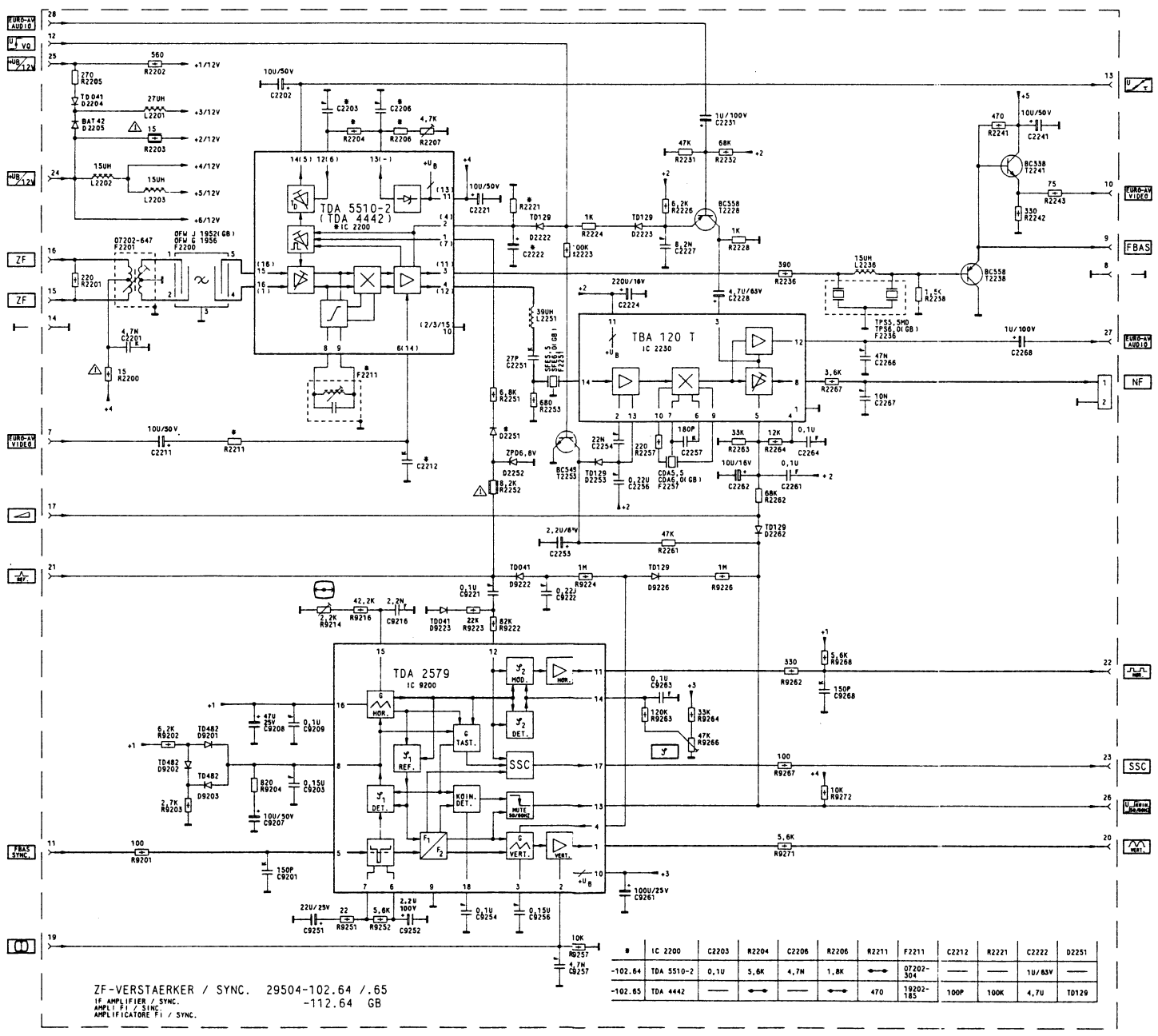


Kein Anpassungsabgleich bei Austausch der Steckkarte notwendig
When replacing the plug-in board, no alignment is necessary
Non è necessaria nessuna taratura di adattamento dopo la sostituzione di una scheda ad innesto

Fernbedienung
Remote control
Telecomando



ZF-Verstärker
IF Amplifier
Amplificatore FI



#	IC 2200	C2203	R2204	C2206	R2206	R2211	F2211	C2212	R2221	C2222	D2251
-102.64	TDA 5510-2	0,1U	5,6K	4,7N	1,8K	⟷	07202-304	—	—	1U/63V	—
-102.65	TDA 4442	—	⟷	—	⟷	470	19202-185	100P	100K	4,7U	TD129

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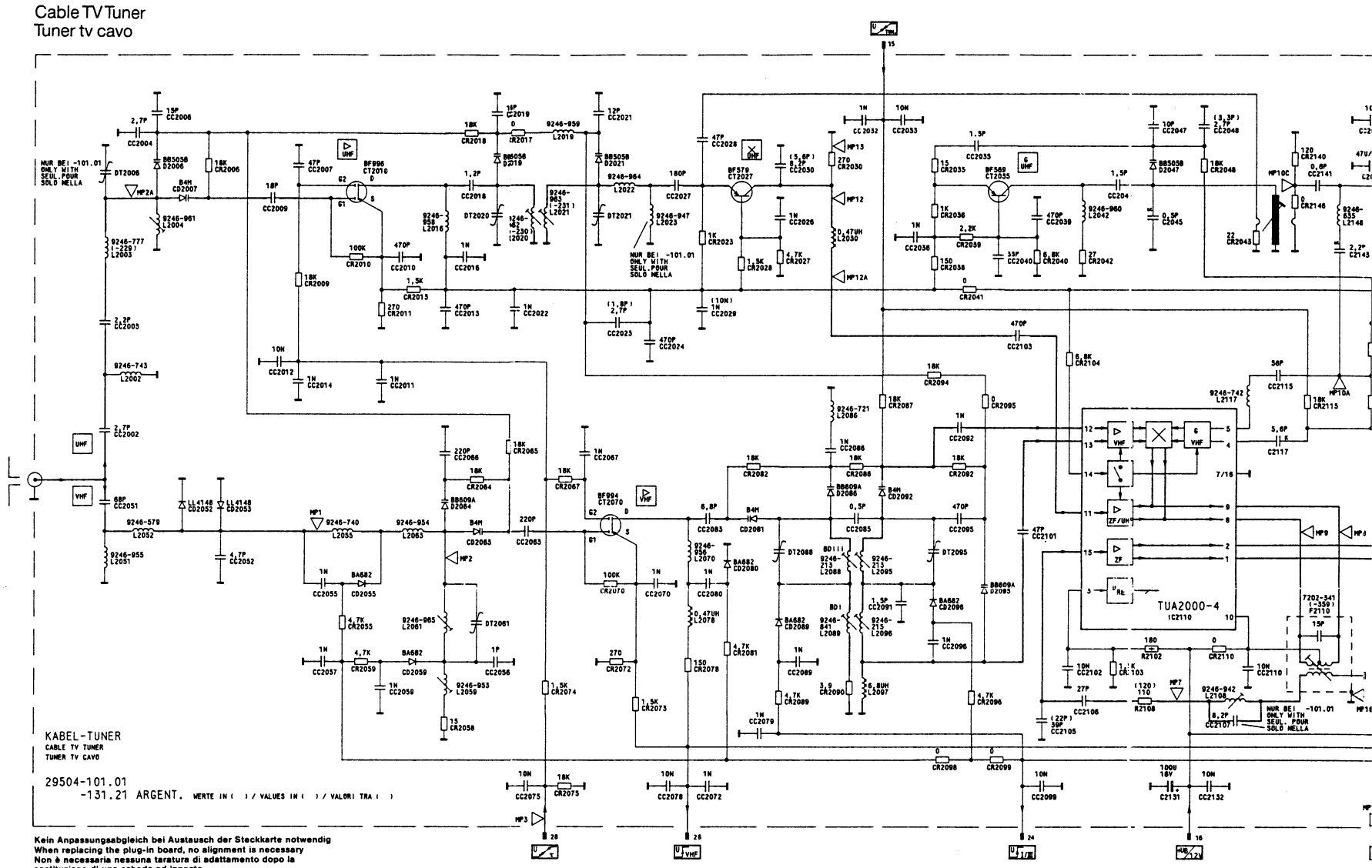
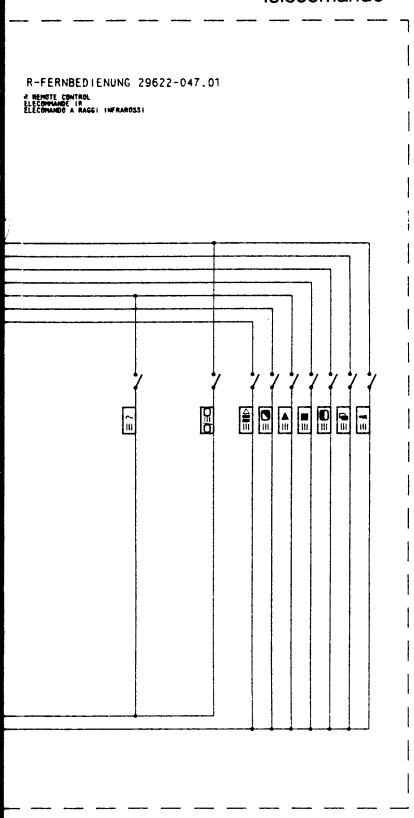
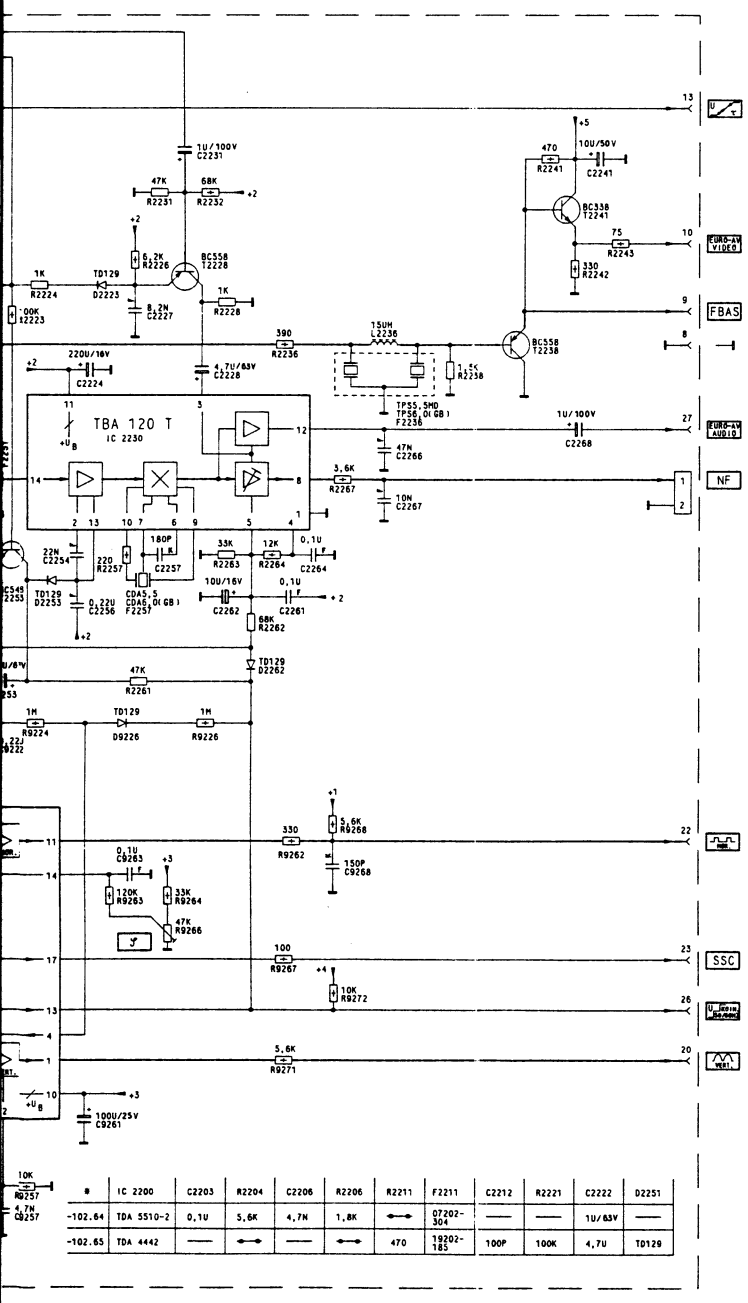
Kabel-Tuner
Cable TV Tuner
Tuner tv cavo


KABEL-TUNER
CABLE TV TUNER
TUNER TV CAVO
29504-101.01
-131.21 ARGENT. WERTE IN ( ) / VALUES IN ( ) / VALORI TRA ( )
TUA2000-4
IC2110
TBA 120 T
IC 2230
MUR BEI -101.01 ONLY WITH SEUL. POUR SOLO MELLA

Kein Anpassungsabgleich bei Austausch der Steckkarte notwendig
When replacing the plug-in board, no alignment is necessary
Non è necessaria nessuna taratura di adattamento dopo la sostituzione di una scheda ad innesto

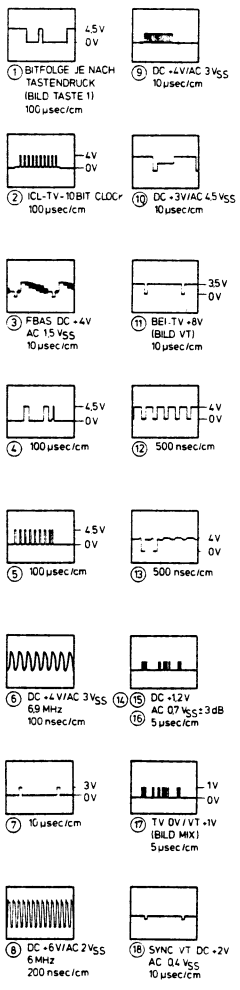
Fernbedienung
Remote control
Telecomando

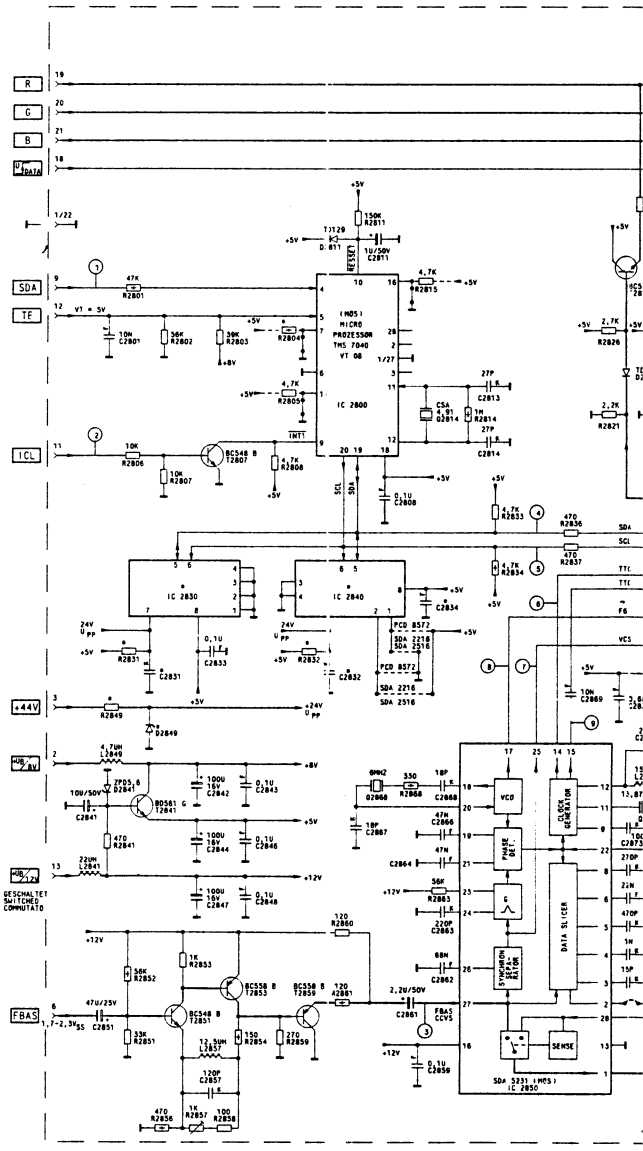


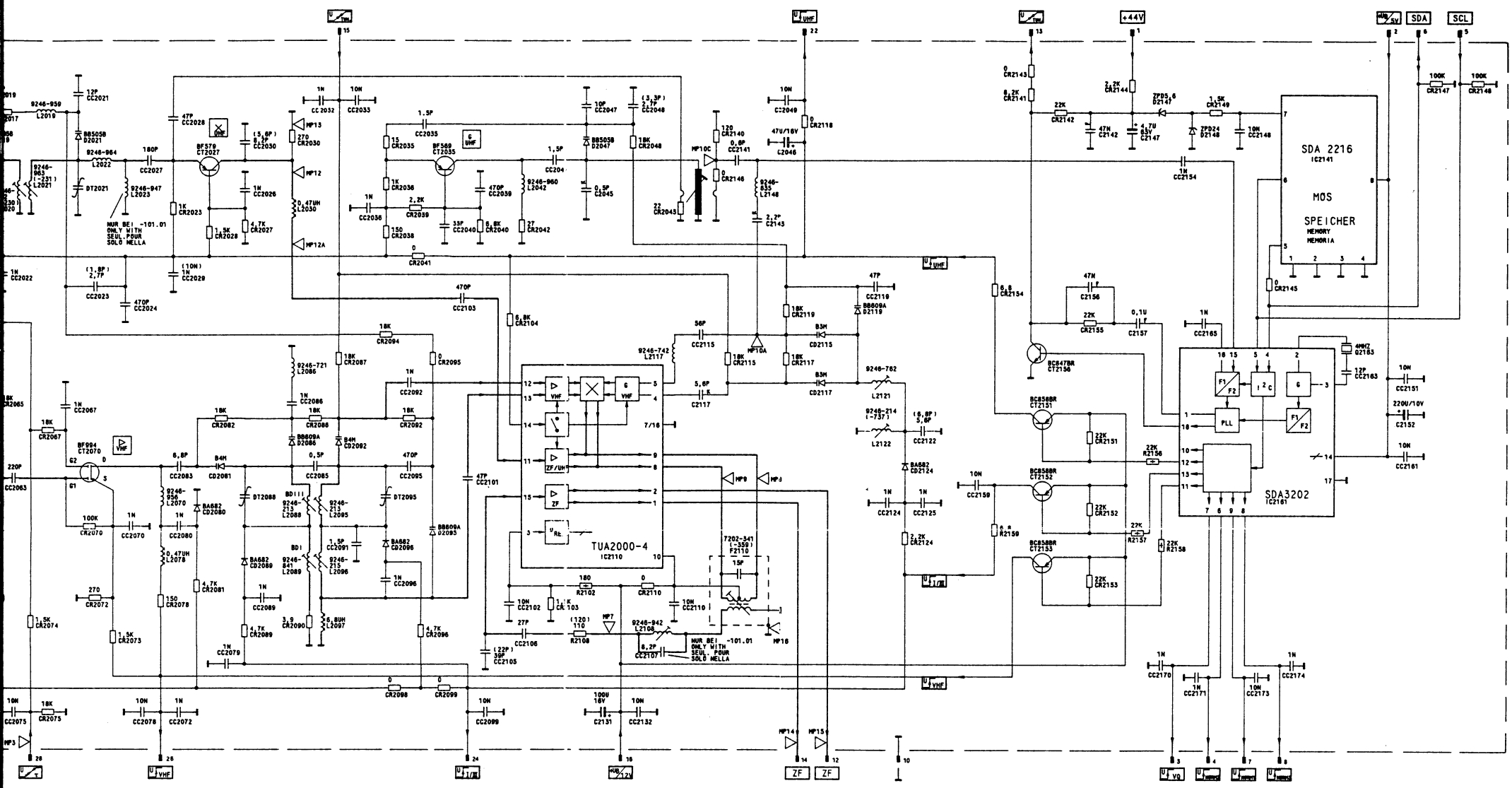


B	IC 2200	C2203	R2204	C2206	R2206	R2211	F2211	C2212	R2221	C2222	D2251
-102.64	TDA 5510-2	0,1U	5,6K	4,7N	1,8K	⟷	07202-304	—	—	1U/63V	—
-102.65	TDA 4442	—	⟷	—	⟷	470	19202-185	100P	100K	4,7U	TD129

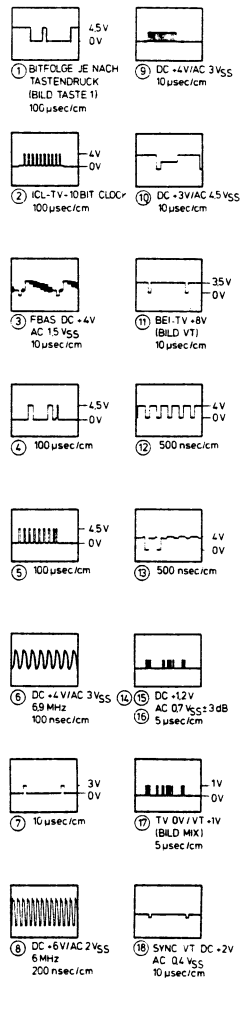
Videotext-Decoder
Teletext Decoder
Decoder Televideo

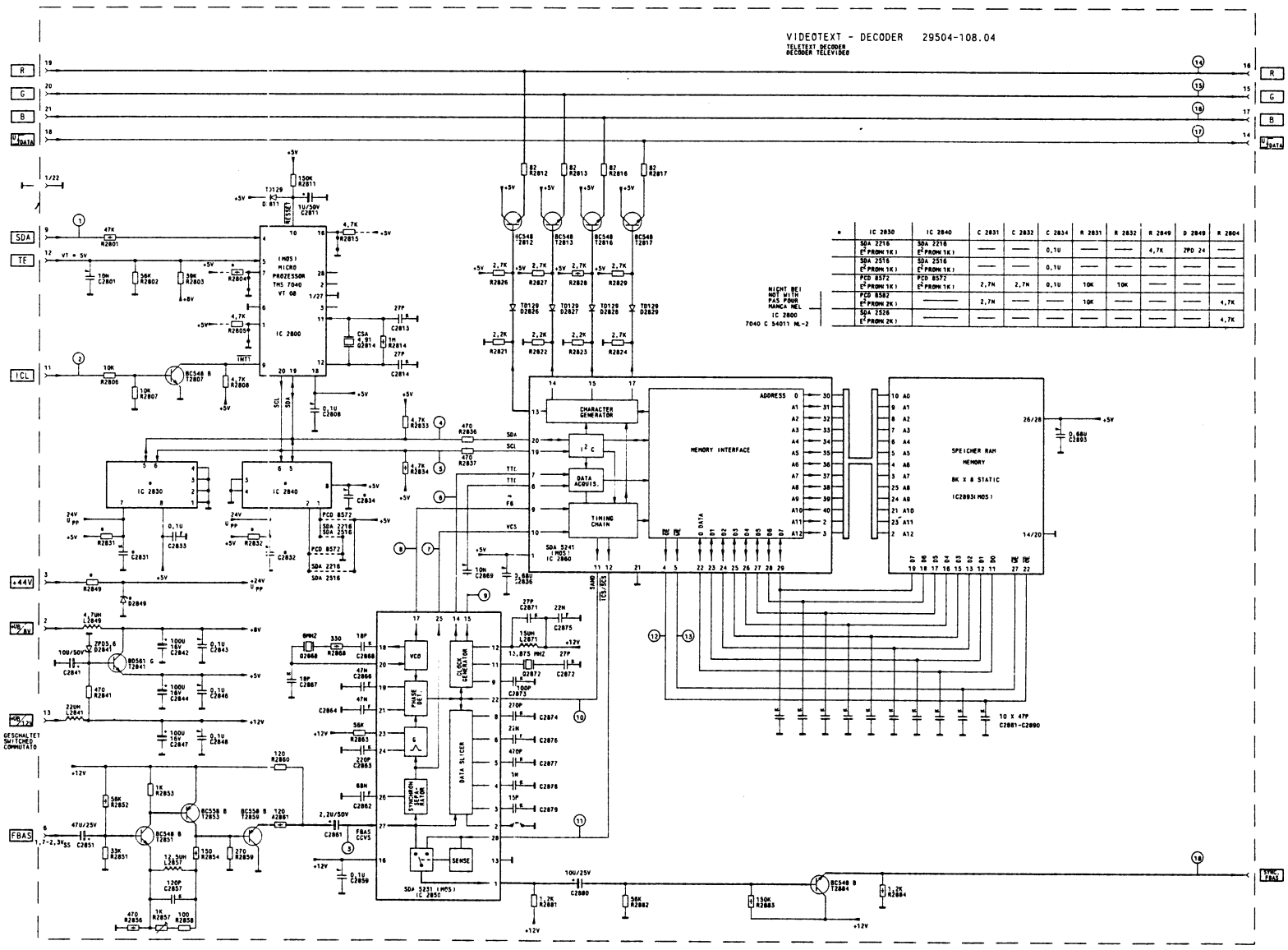

① BITFOLGE JE NACH TASTENDRUCK (BILD TASTE 1) 100 µsec/cm
② ICL-TV-10BIT CLOCr 100 µsec/cm
③ FBAS DC +4V AC 1,5 VSS 10 µsec/cm
④ 100 µsec/cm
⑤ 100 µsec/cm
⑥ DC +4V/AC 3VSS 6,9 MHz 100 nsec/cm
⑦ 10 µsec/cm
⑧ DC +6V/AC 2VSS 6 MHz 200 nsec/cm
⑨ DC +4V/AC 3VSS 10 µsec/cm
⑩ DC +3V/AC 4,5VSS 10 µsec/cm
⑪ BEI-TV +8V (BILD VT) 10 µsec/cm
⑫ 500 nsec/cm
⑬ 500 nsec/cm
⑭⑮⑯ DC +12V AC 0,7 VSS ± 3dB 5 µsec/cm
⑰ TV 0V/VT +1V (BILD MIX) 5 µsec/cm
⑱ SYNC VT DC +2V AC 0,4 VSS 10 µsec/cm



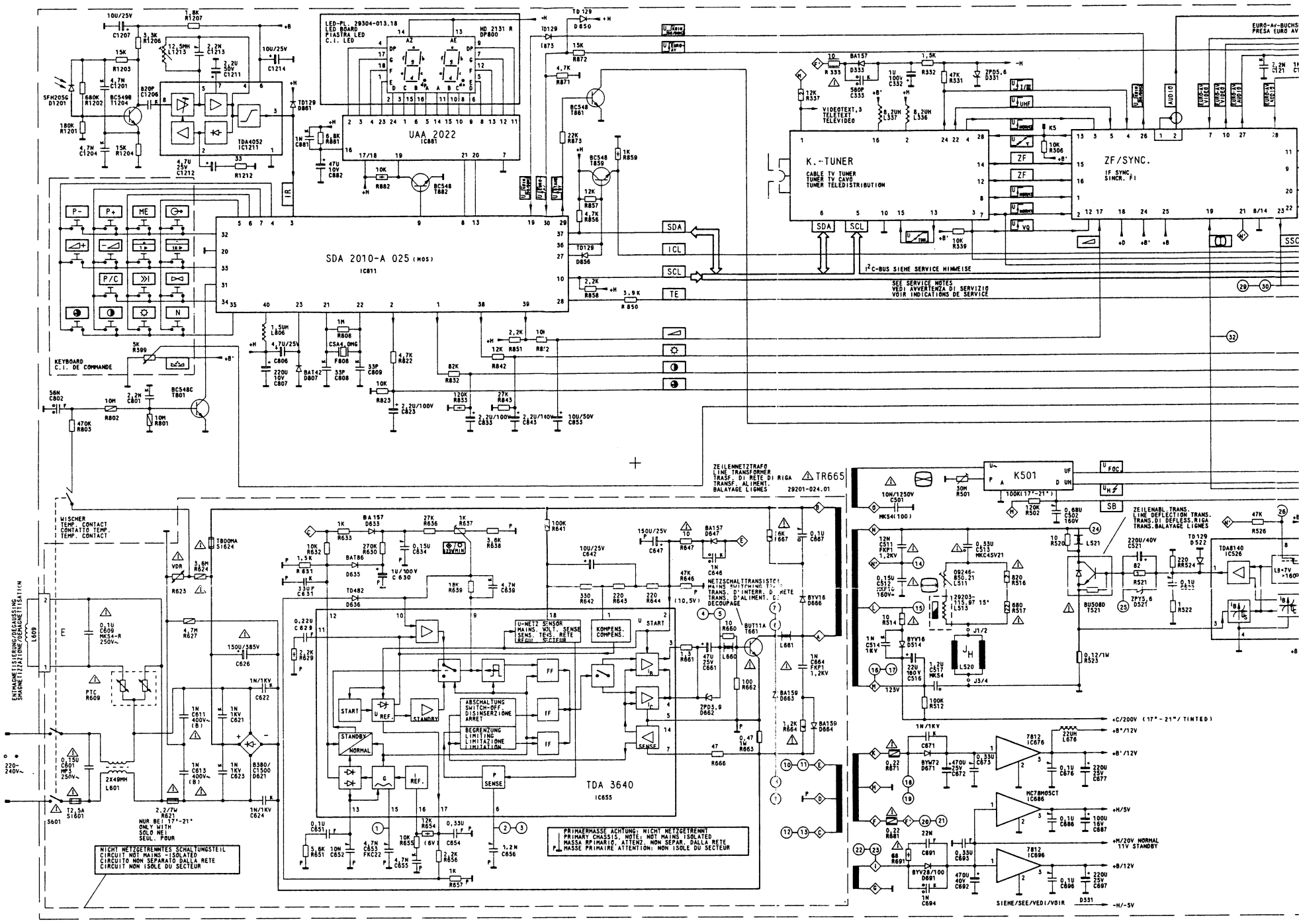


Videotext-Decoder
Teletext Decoder
Decoder Televideo


4,5 V 0 V
① BITFOLGE JE NACH TASTENDRUCK (BILD TASTE 1) 100 µsec/cm
⑨ DC +4V/AC 3 VSS 10 µsec/cm
4V 0V
② ICL-TV-10BIT CLOCK 100 µsec/cm
⑩ DC +3V/AC 4,5 VSS 10 µsec/cm
35V 0V
③ FBAS DC +4V AC 1,5 VSS 10 µsec/cm
⑪ BEI-TV +8V (BILD VT) 10 µsec/cm
④ 100 µsec/cm
⑫ 500 nsec/cm
⑤ 100 µsec/cm
⑬ 500 nsec/cm
⑥ DC +4V/AC 3 VSS 6,9 MHz 100 nsec/cm
⑭ ⑮ DC +1,2 V AC 0,7 VSS ± 3 dB
⑯ 5 µsec/cm
3V 0V
⑦ 10 µsec/cm
1V 0V
⑰ TV 0V/VT +1V (BILD MIX) 5 µsec/cm
⑧ DC +6V/AC 2 VSS 6 MHz 200 nsec/cm
⑱ SYNC VT DC +2V AC 0,4 VSS 10 µsec/cm



●	IC 2830	IC 2840	C 2831	C 2832	C 2834	R 2831	R 2832	R 2849	D 2849	R 2804
	SDA 2216 E²PROM 1K)	SDA 2216 E²PROM 1K)	——	——	0,1U	——	——	4,7K	ZPD 24	——
	SDA 2516 E²PROM 1K)	SDA 2516 E²PROM 1K)	——	——	0,1U	——	——	——	——	——
	PCD 8572 E²PROM 1K)	PCD 8572 E²PROM 1K)	2,7N	2,7N	0,1U	10K	10K	——	——	——
	PCD 8582 E²PROM 2K)	——	2,7N	——	——	10K	——	——	——	4,7K
	SDA 2526 E²PROM 2K)	——	——	——	——	——	——	——	——	4,7K


LED-PL. 29304-013.18
LED BOARD
PIASTRA LED
C.I. LED
UAA 2022
IC881
SDA 2010-A 025 (MOS)
IC811
TDA4052
IC1211
K.-TUNER
CABLE TV TUNER
TUNER TV CAVO
TUNER TELEDISTRIBUTION
ZF/SYNC.
IF SYNC.
SINCR. FI
SDA
SCL
TE
I²C-BUS SIEHE SERVICE HINWEISE
SEE SERVICE NOTES
VEDI AVVERTENZA DI SERVIZIO
VOIR INDICATIONS DE SERVICE
KEYBOARD
C.I. DE COMMANDE
ZEILENNETZTRAFO
LINE TRANSFORMER
TRASF. DI RETE DI RIGA
TRANSF. ALIMENT.
BALAYAGE LIGNES
TR665
29201-024.01
K501
WISCHER
TEMP. CONTACT
CONTATTO TEMP.
TEMP. CONTACT
ENTMAGNETISIERUNG/DEGAUSSING
SMAGNETIZZAZIONE/DEMAGNETITSATION
PTC
R609
2X49MM
L601
T2,5A
S1601
S601
220-
240V~
NICHT NETZGETRENNTES SCHALTUNGSTEIL
CIRCUIT NOT MAINS -ISOLATED
CIRCUITO NON SEPARATO DALLA RETE
CIRCUIT NON ISOLE DU SECTEUR
U-NETZ SENSOR
MAINS VOLT. SENSE
SENS. TENS. RETE
REGU. SECTEUR
KOMPENS.
COMPENS.
NETZSCHALTTRANSISTOR
MAINS SWITCHING TR.
TRANS. D'INTERR. DE RETE
TRANS. D'ALIMENT. DE
DECOUPAGE
START
STANDBY
NORMAL
U REF.
I REF.
G
P SENSE
ABSCHALTUNG
SWITCH-OFF
DISINSERZIONE
ARRET
BEGRENZUNG
LIMITING
LIMITAZIONE
LIMITATION
TDA 3640
IC655
PRIMAERMASSE ACHTUNG: NICHT NETZGETRENNT
PRIMARY CHASSIS, NOTE: NOT MAINS ISOLATED
MASSA RPIMARIO, ATTENZ. NON SEPAR. DALLA RETE
MASSE PRIMAIRE ATTENTION: NON ISOLE DU SECTEUR
+C/200V (17"-21"/ TINTED)
+B'/12V
+H/5V
+M/20V NORMAL
11V STANDBY
+B/12V
-H/-5V
SIEHE/SEE/VEDI/VOIR D331
FBAS
TDA 3562 A/N5
IC 2541
BP
PP
VERT.
HUB 12V
PHASE
SSC
SB
BESTUECKUNGSSEITE
COMPONENT SIDE
CÔTE COMPOSANTS
LATO COMPONENTI
TDA3562A NS
IC2541
Farb/RGB 29504-105.11
Colour/RGB
Colore/RVB
PM 37-47
FARB-RGB 2950
COLOUR / RGB
COULEUR / RVB
COLORE / RVB

UAA 2022 IC881

K.-TUNER
CABLE TV TUNER
TUNER TV CAVO
TUNER TELEDISTRIBUTION

ZF/SYNC.
IF SYNC.
SINCR. FI

VIDEOTEXT
TELETEXT
TELEVIDEO
VT-STECKERPL.
TELETEXT SOCKET BOARD
PIASTRA A SPINA TELEVIDEO
PLAQUE ENFICHABLE ANTIOPE

FARB/RGB
COLOURE/RGB
COLRE/RVB
DECODEUR/RVB

EURO-AV-BUCHSE/EURO-AV SOCKET
PRESA EURO AV/EMBASE PERI TV

OFFEN BEI IT.
OPEN IN IT.VERS.
ARERTO NELLA VERS IT.

I²C-BUS SIEHE SERVICE HINWEISE
SEE SERVICE NOTES
VEDI AVVERTENZA DI SERVIZIO
VOIR INDICATIONS DE SERVICE

ZEILENNETZTRAFO
LINE TRANSFORMER
TRASF. DI RETE DI RIGA
TRANSF. ALIMENT.
BALAYAGE LIGNES
29201-024.01

NETZSCHALTTRANSISTOR
MAINS SWITCHING TR.
TRANS. D'INTERR. D. RETE
TRANS. D'ALIMENT. DE
DECOUPAGE

U-NETZ SENSOR
MAINS. VOLT. SENSE
SENS. TENS. RETE
REGUL. SECTEUR

ABSCHALTUNG
SWITCH-OFF
DISINSERZIONE
ARRET

BEGRENZUNG
LIMITING
LIMITAZIONE
LIMITATION

TDA 3640
IC655

PRIMAERMASSE ACHTUNG: NICHT NETZGETRENNT
PRIMARY CHASSIS, NOTE: NOT MAINS ISOLATED
MASSA RPIMARIO, ATTENZ. NON SEPAR. DALLA RETE
MASSE PRIMAIRE ATTENTION: NON ISOLE DU SECTEUR

ZEILENABL.TRANS.
LINE DEFLECTION TRANS.
TRANS.DI DEFLESS.RIGA
TRANS.BALAYAGE LIGNES

NORM ZWANG
STANDARD ENFORCE

NORM UMSCHALT.
STANDARD SWITCH OVER

TDA8170
IC411

TDA 3562 A/N5
IC 2541

FARB-RGB 29504-105.21/.23
COLOUR / RGB -145.21 FR
COULEUR / RVB -185.21
COLORE / RVB -185.21

FM 100-22
CHASSIS 19701-046.25 VERS. B 15"
TELAIO -046.26 VERS. B 17"
-046.06 VERS. A 16"
-046.69 VERS. A CTI 16"
-046.75 VERS. A 16"
-046.79 VERS. A 14"
-046.91 VERS. B CTI 15"
-046.92 VERS. B CTI 17"
-046.99 VERS. B 15"

Farb/RGB 29504-105.11
Colour/RGB
Colore/RVB

PM 37-47

FM 100-22

CHASSIS 19701-046.25 VERS. B 15"
TELAIO -046.26 VERS. B 17"
-046.06 VERS. A 16"
-046.69 VERS. A CTI 16"
-046.75 VERS. A 16" TINTED
-046.79 VERS. A 14"
-046.91 VERS. B CTI 15"
-046.92 VERS. B CTI 17"
-046.99 VERS. B 15" TINTED

AENDERUNGEN VORBEHALTEN
SUBJECT TO ALTERATION
MODIFICATIONS RESERVEES
CON RISERVA DI MODIFICA

PRINTED IN GERMANY

504-105.21/.23
-145.21 FR
-185.21